Ruijie RG-S6500 Series Switches

RGOS Command Reference, Release 11.0(5)B9P66

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Preface

Thank you for using our products. This manual matches the RGOS Release 11.0(5)B9P66.

Audience

This manual is intended for:

- Network engineers
- Technical support and servicing engineers
- Network administrators

Obtaining Technical Assistance

- Ruijie Networks Website: https://www.ruijienetworks.com/
- Technical Support Website: https://ruijienetworks.com/support
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- Technical Support Email: service_rj@ruijienetworks.com
- Skype: service_rj@ruijienetworks.com

Related Documents

Documents	Description
Configuration Guide	Describes network protocols and related mechanisms that supported by the product, with configuration examples.
Hardware Installation and Reference Guide	Describes the functional and physical features and provides the device installation steps, hardware troubleshooting, module technical specifications, and specifications and usage guidelines for cables and connectors.

Conventions

This manual uses the following conventions:

Convention	Description
boldface font	Commands, command options, and keywords are in **boldface**.
italic font	Arguments for which you supply values are in *italics*.
[ ]	Elements in square brackets are optional.
{ x | y | z }	Alternative keywords are grouped in braces and separated by vertical bars.

[x | y | z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.

Symbols

Means reader take note. Notes contain helpful suggestions or references.

Means reader be careful. In this situation, you might do something that could result in equipment damage or loss of data.

System Configuration Commands

1. Command Line Interface Commands
2. Basic Configuration Management Commands
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5. File System Commands
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1 Command Line Interface Commands

1.1 alias

Use this command to configure a command alias in global configuration mode. Use the **no** form of this command to restore the default setting.

alias *mode command-alias original-command*

no alias *mode command-alias*

Parameter Description

Parameter	Description
mode	Mode of the command represented by the alias
command-alias	Command alias
original-command	Syntax of the command represented by the alias

Defaults Some commands in user or privileged EXEC mode have default alias.

Command Mode Global configuration mode.

Usage Guide The following table lists the default alias of the commands in privileged EXEC mode.

Alias	Actual Command
h	help
p	ping
s	show
u	undebug
un	undebug

The default alias cannot be removed by the **no alias exec** command.

After configuring the alias, you can use a word to replace a command. For example, you can create an alias to represent the first part of a command, and then type the rest part of the command.

The mode of the command represented by the alias is the command mode existing in the current system. In the global configuration mode, you can use the **alias ?** command to list all the modes under which you can configure alias for commands.

```
Ruijie(config)# alias ?
  aaa-gs              AAA server group mode
  acl                 acl configure mode
  bgp                 Configure bgp Protocol
  config              globle configure mode
......
```

The alias also has its help information that is displayed after * in the following format:

```
*command-alias=original-command
```

For example, in the privileged EXEC mode, the default alias s stands for show. You can enter s? to query the key words beginning with s and the help information of the alias.

```
Ruijie#s?
*s=show  show  start-chat  start-terminal-service
```

If an alias represents more than one word, the command will be displayed in brackets. For example, if you set sv stand for show version in the privileged EXEC mode, then:

```
Ruijie#s?
*s=show  *sv="show version" show  start-chat
start-terminal-service
```

The alias must begin with the first letter of the command. The first letter of the command cannot be a space. The space before the command cannot be used as a valid alias.

```
Ruijie# s?
show  start-chat  start-terminal-service
```

The command alias also has its help information. For example, if the alias ia represents ip address in the interface configuration mode, then:

```
Ruijie(config-if)#ia ?
  A.B.C.D  IP address
  dhcp     IP Address via DHCP
Ruijie(config-if)# ip address
```

The above help information lists the parameters of **ip address** and shows the actual command name. You must enter an entire alias; otherwise it cannot be recognized.

Use the **show aliases** command to show the aliases setting in the system.

Configuration Examples

The following example uses def-route to represent the default route setting of ip route 0.0.0.0 0.0.0.0 192.168.1.1 in the global configuration mode:

```
Ruijie# configure terminal
Ruijie(config)# alias config def-route ip route 0.0.0.0 0.0.0.0 192.168.1.1
Ruijie(config)#def-route?
*def-route="ip route 0.0.0.0 0.0.0.0 192.168.1.1"
Ruijie(config)# end
Ruijie# show aliases config
globle configure mode alias:
def-route          ip route 0.0.0.0 0.0.0.0
192.168.1.1
```

Related Commands

Command	Description
show aliases	Displays the aliases settings.

Platform Description

N/A

1.2 privilege

Use this command to attribute the execution rights of a command to a command level in global configuration mode. Use the **no** form of this command to restore the default setting.

privilege *mode* [**all**] [**level** *level* **| reset**] *command-string*

no privilege *mode* [**all**] [**level** *level*] *command-string*

Parameter Description

Parameter	Description
mode	CLI mode of the command to which the execution rights are attributed.
all	Command alias
level *level*	Specifies the execution right levels (0–15) of a command or sub-commands
reset	Restores the command execution rights to its default level
command-string:	Command string to be authorized

Defaults N/A

Command Mode Global configuration mode.

Usage Guide The following table lists some key words that can be authorized by the **privilege** command in CLI mode. The number of command modes that can be authorized may vary with different devices. In the global configuration mode, you can use the **privilege ?** command to list all CLI command modes that can be authorized.

Mode	Descripton
config	Global configuration mode.
exec	Privileged EXEC mode
interface	Interface configuration mode
ip-dhcp-pool	DHCP address pool configuration mode
ip-dhcp-pool	DHCP address pool configuration mode
keychain	KeyChain configuration mode
keychain-key	KeyChain-key configuration mode

Configuration Examples The following example sets the password of CLI level 1 as **test** and attribute the **reload** rights to reset the device:

```
Ruijie(config)#privilege exec level 1 reload
```

You can access the CLI window as level-1 user to usef the **reload** command:

```
Ruijie>reload ?
LINE    Reason for reload
```

<cr> You can use the key word **all** to attribute all sub-commands of reload to level-1 users:

```
Ruijie(config)# privilege exec all level 1 reload
```

After the above setting, you can access the CLI window as level-1 user to use all sub commands of the **reload** command:

```
Ruijie>reload ?
LINE    Reason for reload
at                  reload at a specific time/date
cancel              cancel pending reload scheme
in                  reload after a time interval
<cr>
```

Related Commands

Command	Description
enable secret	Sets the CLI-level password.

Platform Description N/A.

1.3 show aliases

Use this command to show all the command aliases or aliases in special command modes.

show aliases [*mode*]

Parameter Description

Parameter	Description
mode	Mode of the command represented by the alias.

Defaults N/A.

Command Mode Privileged EXEC mode.

Usage Guide This command displays the configuration of all aliases if no command mode is input.

Configuration Examples The following example displays the command alias in privileged EXEC mode:

```
Ruijie#show aliases exec
exec mode alias:
h                 help
p                 ping
s                 show
u                 undebug
un                undebug
```

Related Commands

Command	Description
alias	Sets a command alias.

Platform Description N/A.

2 Basic Configuration Management Commands

2.1 <1-99>

Use this command to restore the suspended Telnet Client session.

<1-99>

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode User EXEC mode

Usage Guide This command is used to restore the suspended Telnet Client session. Hot keys (ctrl+shift+6 x) are used to exit the Telnet Client session creation. The **<1-99>** command is used to restore the session. If the session is created, you can use the **show session** command to display the session.

Configuration Examples The following example restores the suspended Telnet Client session.

```
Ruijie# 1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.2 banner exec

Use this command to configure a message to welcome the user entering user EXEC mode through the line. Use the **no** form of this command to restore the default setting.

banner exec *c message c*

no banner exec

Parameter Description

Parameter	Description
c	Separator of the message. Delimiters are not allowed in the message.

message	Contents of the message.

Defaults N/A

Command Mode Global configuration mode

Usage Guide This command is used to configure the welcome message. The system discards all the characters next to the terminating symbol.
When you are logging in to the device, the MOTD message is displayed at first, and then the banner login message. After you have logged in, the EXEC message or the incoming message is displayed. If it's a reverse Telnet session, the incoming message is displayed. Otherwise, the EXEC message is displayed.
The messages are for all lines. If you want to disable display the EXEC message on a specific line, configure the **no exec-banner** command on the line.

Configuration Examples The following example configures a welcome message.

```
Ruijie(config)# banner exec $ Welcome $
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.3 banner incoming

Use this command to configure a prompt message for reverse Telnet session. Use the **no** form of this command to remove the setting.
banner incoming *c message c*
no banner incoming

Parameter Description

Parameter	Description
c	Separator of the message. Delimiters are not allowed in the message.
message	Contents of the message.

Defaults N/A

Command Mode Global configuration mode

Usage Guide This command is used to configure a prompt message. The system discards all the characters next to the terminating symbol.
When you are logging in to the device, the MOTD message is displayed at first, and then the banner login message. After you have logged in, the welcome message or the prompt message is displayed. If it's a reverse Telnet session, the prompt message is displayed. Otherwise, the welcome message is displayed.

Configuration Examples The following example configures a prompt message for reverse Telnet session.

```
Ruijie(config)# banner incoming $ Welcome $
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.4 banner login

Use this command to configure a login banner. Use **no** form of this command to r remove the setting.
banner login *c message c*
no banner login

Parameter Description

Parameter	Description
c	Separator of the message contained in the login banner. Delimiters are not allowed in the MOTD.
message	Contents of the login banner

Defaults N/A

Command Mode Global configuration mode

Usage Guide This command sets the login banner message, which is displayed at login. The system discards all the characters next to the terminating symbol.

Configuration Examples The following example configures a login banner.

```
Ruijie(config)# banner login $ enter your password $
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.5 banner motd

Use this command to set the Message-of-the-Day (MOTD) . Use the **no** form of this command to remove the setting.

banner [**motd**] *c message c*

no banner [**motd**]

Parameter Description

Parameter	Description
c	Separator of the MOTD. Delimiters are not allowed in the MOTD.
message	Contents of an MOTD

Defaults N/A

Command Mode Global configuration mode

Usage Guide This command sets the MOTD, which is displayed at login. The letters that follow the separator will be discarded.

Configuration Examples The following example configures the MOTD.

```
Ruijie(config)# banner motd $ hello,world $
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.6 banner prompt-timeout

Use this command to configure the prompt-timeout message to notify timeout. Use the **no** form of this command to remove the setting.

banner prompt-timeout *c message c*

no banner prompt-timeout

Parameter Description

Parameter	Description
c	Separator of the message. Delimiters are not allowed in the

	message.
message	Contents of the message.

Defaults N/A

Command Mode Global configuration mode

Usage Guide The system discards all the characters next to the terminating symbol.
When authentication times out, the banner prompt-timeout message is displayed.

Configuration Examples The following example configures the prompt-timeout message to notify timeout.

```
Ruijie(config)# banner exec $ authentication timeout $
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.7 banner slip-ppp

Use this command to configure the slip-ppp message for the SLIP/PPP session. Use the **no** form of this command to remove the setting.
banner slip-ppp *c message c*
no banner slip-pp

Parameter Description

Parameter	Description
c	Separator of the message. Delimiters are not allowed in the message.
message	Contents of the message.

Defaults N/A

Command Mode Global configuration mode

Usage Guide This command is used to configure the slip-ppp message for the SLIP/PPP session. The system discards all the characters next to the terminating symbol.
When the SLIP/PPP session is created, the slip-ppp message is displayed on the corresponding terminal.

Configuration Examples The following example configures the banner slip-ppp message for the SLIP/PPP session.

```
Ruijie(config)# banner slip-ppp $ Welcome $
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.8 configure

Use this command to enter global configuration mode.

configure [**terminal**]

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example enters global configuration mode.

```
Ruijie# configure
Ruijie(config)#
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.9 disable

Use this command to switch from privileged EXEC mode to user EXEC mode or lower the privilege level.

disable [*privilege-level*]

Parameter Description

Parameter	Description
privilege-level	Privilege level

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Use this command to switch to user EXEC mode from privileged EXEC mode. If a new privilege level is added, the current privilege level will be lowered.
The privilege level that follows the **disable** command must be lower than the current level.

Configuration Examples The following example lowers the current privilege level of the device to level 10.

```
Ruijie# disable 10
```

Related Commands

Command	Description
enable	Moves from user EXEC mode enter to privileged EXEC mode or reaches a higher level of authority.

Platform Description N/A

2.10 disconnect

Use this command to disconnect the Telnet Client session.
disconnect *session-id*

Parameter Description

Parameter	Description
session-id	Telnet Client session ID.

Defaults N/A

Command Mode User EXEC mode

Usage Guide This command is used to disconnect the Telnet Client session by setting the session ID.

Configuration Examples The following example disconnects the Telnet Client session by setting the session ID.

```
Ruijie# disconnect 1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.11 enable

Use this command to enter privileged EXEC mode.

enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode N/A

Usage Guide N/A

Configuration Examples N/A

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.12 enable password

Use this command to configure passwords for different privilege levels. Use the **no** form of this command to restore the default setting.

enable password [**level** *level*] { *password* **|** [**0 | 7**] *encrypted-password* }

no enable password [**level** *leve l*]

Parameter Description

Parameter	Description

password	Password for the user to enter the EXEC configuration layer
level	User's level.
0 | **7**	Password encryption type, "0" for no encryption, "7" for simple encryption (Optional) Ruijie's private algorithm will be used for password encryption. If the password type is 0, the password is in plain text. If the type is 7, the password is encrypted by a Ruijie device.
encrypted-password	Password text.

Defaults N/A

Command Mode Global configuration mode

Usage Guide No encryption is required in general. The encryption type must be specified for copying and pasting a encrypted password for the device.
A valid password is defined as follows:

- Consists of 1-26 upper/lower case letters and numbers
- Leading spaces are allowed but usually ignored. Spaces in between or at the end are regarded as part of the password.

If an encryption type is specified and a plaintext password is entered, you cannot enter privileged EXEC mode. A lost password that has been encrypted using any method cannot be restored. In this case, you can only reconfigure the device password.

Configuration Examples The following example configures the password as **pw10**.

```
Ruijie(config)# enable password pw10
```

Related Commands

Command	Description
enable secret	Sets the security password

Platform Description N/A

enable secret Sets the security password

2.13 enable secret

Use this command to configure a security password for different privilege levels. Use the **no** form of this command to restore the default setting.
enable secret [**level** ***level***] { ***secret*** | [**0** | **5**] ***encrypted-secret*** }
no enable secret [**level** *level*]

Parameter Description

Parameter	Description
secret	Password for the user to enter the EXEC configuration layer
level	User's level.
0 | **5**	Password encryption type, "0" for no encryption, "5" for security encryption
encrypted-password	Password text

Defaults N/A

Command Mode Global configuration mode

Usage Guide A password comes under two categories: "password" and "security". "Password" indicates a simple password, which can be set only for level 15. "Security" means a security password, which can be set for levels 0-15. If both types of passwords coexist in the system, no "password" type is allowed. If a "password" type password is set for a level other than 15, the system gives an alert and the password is automatically converted into a "security" password. If a "password" type password is set for level 15 and the same as a "security" password, an alert is given. The password must be encrypted, with simple encryption for "password" type passwords and security encryption for "security" type passwords.

Configuration Examples The following example configures the security password as **pw10**.

```
Ruijie(config)# enable secret 0 pw10
```

Related Commands

Command	Description
enable password	Sets passwords for different privilege levels.

Platform Description N/A

2.14 enable service

Use this command to enable or disable a specified service such as **SSH Server/Telnet Server/Web Server/SNMP Agent**.

enable service { **ssh-sesrver** | **telnet-server** | **web-server** [**http | https | all**] | **snmp-agent** }

Parameter Description

Parameter	Description
ssh-server	Enables SSH Server. IPv4 and IPv6 services are enabled at the same time.

telnet-server	Enables Telnet Server. IPv4 and IPv6 services are enabled at the same time.
web-server [**http | https | all**]	Enables HTTP Server. IPv4 and IPv6 services are enabled at the same time.
snmp-agent	Enables SNMP Agent. IPv4 and IPv6 services are enabled at the same time.

Defaults N/A

Command Mode Global configuration mode

Usage Guide Use this command to enable or disable a specified service. Use the **no enable service** command to disable the specified service.
The **enable service web-server** command is followed by three optional keywords: [http | https | all]. If the command is followed by no keyword or by **all**, the command enables http and https services. Followed by **http**, the command enables http service only. Followed by **https**, the command enables https service only.

Configuration Examples The following example enables the SSH Server.

```
Ruijie(Config)# enable service ssh-sesrver
```

Related Commands

Command	Description
show service	Displays the service status in the current system.

Platform Description N/A

2.15 end

Use this command to return to privileged EXEC mode.
end

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode All modes except privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example returns to privileged EXEC mode.

```
Ruijie#con
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#line vty 0
Ruijie(config-line)#end
*May 20 09:49:38: %SYS-5-CONFIG_I: Configured from console by console
Ruijie#
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.16 exec-banner

Use this command to enable display of the EXEC message on a specific line. Use the **no** form of this command to restore the default setting.

exec-banner

no exec-banner

Parameter Description

Parameter	Description
N/A	N/A

Defaults The EXEC message is displayed on all lines by default.

Command Mode LINE configuration mode

Usage Guide After you configure the **banner exec** and the **banner motd** commands, the EXEC and the MOTD messages are displayed on all lines by default. If you want to disable display of the EXEC and the MOTD messages on a specific line, configure the **no** form of this command on the line.

This command does not work for the banner incoming message. If you configure the **banner incoming** command, the banner incoming message is displayed on all reverse Telnet sessions and the display cannot be disabled on a specific line.

Configuration Examples The following example disables display of the EXEC message on line VTY 1.

```
Ruijie(config)# line vty 1
Ruijie(config-line)no exec-banner
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.17 exec-timeout

Use this command to configure connection timeout for this device in LINE mode. Use the **no** form of this command to restore the default setting and the connection never expires.

exec-timeout *minutes* [***seconds***]

no exec-timeout

Parameter Description

Parameter	Description
minutes	Timeout in minutes.
seconds	(Optional) Timeout in minutes

Defaults The default is 10 minutes.

Command Mode Line configuration mode

Usage Guide If there is no input or output for this connection within a specified time, this connection will expire, and this LINE will be restored to the free status.

Configuration Examples The following example sets the connection timeout to 5’30’’.

```
Ruijie(config-line)#exec-timeout 5 30
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.18 exit

Use this command to return to the upper configuration mode.

exit

Parameter

Parameter	Description

Description

N/A	N/A

Defaults N/A

Command Mode All configuration modes

Usage Guide N/A

Configuration Examples The following example returns to the upper configuration mode.

```
Ruijie#con
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#line vty 0
Ruijie(config-line)#end
*May 20 09:49:38: %SYS-5-CONFIG_I: Configured from console by console
Ruijie#con
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#line vty 0
Ruijie(config-line)#exit
Ruijie(config)#exit
*May 20 09:51:48: %SYS-5-CONFIG_I: Configured from console by console
Ruijie#exit

Press RETURN to get started
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.19 help

Use this command to display the help information.

help

Parameter Description

Parameter	Description
N/A	N/A

Defaults Any mode

Command Mode

Usage Guide This command is used to display brief information about the help system. You can use ”?” to display all commands or a specified command with its parameters.

Configuration Examples The following example displays brief information about the help system.

```
Ruijie#help
Help may be requested at any point in a command by entering
a question mark '?'.  If nothing matches, the help list will
be empty and you must backup until entering a '?' shows the
available options.
Two styles of help are provided:
1. Full help is available when you are ready to enter a
   command argument (e.g. 'show ?') and describes each possible
   argument.
2. Partial help is provided when an abbreviated argument is entered
   and you want to know what arguments match the input
   (e.g. 'show pr?'.)
```

The following example displays all available commands in interface configuration mode.

```
Ruijie(config-if-GigabitEthernet 0/0)#?
Interface configuration commands:
  arp             ARP interface subcommands
  bandwidth        Set bandwidth informational parameter
  carrier-delay    Specify delay for interface transitions
  dampening        Enable event dampening
  default          Set a command to its defaults
  description      Interface specific description
  dldp            Exec data link detection command
  duplex           Configure duplex operation
  efm             Config efm for an interface
  end             Exit from interface configuration mode
  exit            Exit from interface configuration mode
  expert           Expert extended ACL
  flowcontrol      Set the flow-control value for an interface
  full-duplex      Force full duplex operation
  global           Global ACL
  gvrp            GVRP configure command
  half-duplex      Force half duplex operation
  help            Description of the interactive help system
  ip              Interface Internet Protocol config commands
  ipv6            Internet Protocol Version 6
  isis            Intermediate System - Intermediate System (IS-IS)
  l2              Config L2 attribute
```

```
 label-switching  Enable interface process mpls packet
 lacp           LACP interface subcommands
 lldp           Link Layer Discovery Protocol
 load-interval   Specify interval for load calculation for an interface
 mac            Mac extended ACL
 mac-address     Set mac-address
 mpls           Multi-Protocol Label Switching
 mtu            Set the interface Maximum Transmission Unit (MTU)
 no             Negate a command or set its defaults
 ntp            Configure NTP
 port-group      Aggregateport/port bundling configuration
 redirect        Redirect packets
 rmon           Rmon command
 security        Configure the Security
 show           Show running system information
 shutdown        Shutdown the selected interface
 snmp           Modify SNMP interface parameters
 speed          Configure speed operation
 switchport      Set switching mode characteristics
 vrf            Multi-af VPN Routing/Forwarding parameters on the interface
 vrrp           VRRP interface subcommands
 xconnect         Xconnect commands
```

The following example displays the parameters of a specified command.

```
Ruijie(config)#access-list 1 permit ?
 A.B.C.D  Source address
 any     Any source host
 host     A single source host
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.20 hostname

Use this command to specify or modify the hostname of a device**.**

hostname *name*

Parameter Description

Parameter	Description
name	Device hostname, string, number or hyphen, up to 63 characters.

Defaults The default is Ruijie.

Command Mode Global configuration mode

Usage Guide This hostname is mainly used to identify the device and is taken as the username for the local device during dialup and CHAP authentication.

Configuration Examples The following example configures the hostname of the device as BeiJingAgenda.

```
Ruijie(config)# hostname BeiJingAgenda
BeiJingAgenda(config)#
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.21 ip telnet access-class

Use this command to configure the ACL for the Telnet server. Use the **no** form of this command to delete the rule.

ip telnet access-class { *access-list-number* | *access-list-name* }

no ip telnet access-class

Parameter Description

Parameter	Description
access-list-number	Configures the ACL number. Standard ACL: 1-99, 1300-1999 Extended ACL: 100-199, 2000-2699
access-list-name	Configures the ACL name.

Defaults N/A

Command Mode Global configuration mode

Usage Guide This command is used to configure the ACL for all Telnet connections.

Configuration Examples The following example configures ACL named testv4.

```
Ruijie# configure terminal
Ruijie(config)# ip telnet access-class testv4
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.22 ip telnet source-interface

Use this command to configure the IP address of an interface as the source address for Telnet connection.

ip telnet source-interface *interface-name*

Parameter Description

Parameter	Description
interface-name	Configures the IP address of the interface as the source address for Telnet connection.

Defaults N/A

Command Mode Global configuration mode

Usage Guide This command is used to specify the IP address of an interface as the source address for global Telnet connetction. When using the telnet command to log in a Telnet server, apply the global setting if no source interface or source address is specified. Use the **no ip telnet source-interface** command to restore it to the default setting.

Configuration Examples The following example configures the IP address of the *Loopback1* interface as the source address for global Telnet connection.

```
Ruijie(Config)# ip telnet source-interface Loopback 1
```

Related Commands

Command	Description
telnet	Logs in a Telnet server.

Platform Description N/A

2.23 ipv6 telnet access-class

Use this command to configure the ACL for the Telnet server. Use the **no** form of this command to delete the rule.

ipv6 telnet access-class *accessv6-list-name*
no ipv6 telnet access-class

Parameter Description

Parameter	Description
accessv6-list-name	Configures the ACL name.

Defaults N/A

Command Mode Global configuration mode

Usage Guide This command is used to configure the IPv6 ACL for all Telnet connections.

Configuration Examples The following example configures ACL named testv6.

```
Ruijie# configure terminal
Ruijie(config)# ip telnet access-class testv6
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.24 lock

Use this command to set a temporary password for the terminal.
lock

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide You can lock the terminal interface and maintain the session continuity to prevent access to the interface by setting a temporary password. Take the following steps to lock the terminal interface:

- Enter the **lock** command, and the system will prompt you for a password:
- Enter the password, which can be any character string. The system will prompt you to confirm

the password, clear the screen, and display the "Locked" information.

- To access the terminal, enter the preset temporary password.
- To lock the terminal, run the **lockable** command in line configuration mode and enable terminal locking in the corresponding line.

Configuration Examples The following example locks a terminal interface.

```
Ruijie(config-line)# lockable
Ruijie(config-line)# end
Ruijie# lock
Password: <password>
Again: <password>
Locked
Password: <password>
Ruijie#
```

Related Commands

Command	Description
lockable	Supports terminal locking in the line.

Platform Description N/A

2.25 lockable

Use this command to support the **lock** command at the terminal. Use the **no** form of this command to restore the default setting.

lockable

no lockable

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode This function is disabled by default.

Usage Guide This command is used to lock a terminal interface in the corresponding line. To lock the terminal, run the lock command in EXEC mode.

Configuration Examples The following example enables terminal locking at the console port and locks the console.

```
Ruijie(config)# line console 0
```

```
Ruijie(config-line)# lockable
Ruijie(config-line)# end
Ruijie# lock
Password: <password>
Again: <password>
Locked
Password: <password>
```

Related Commands

Command	Description
lock	Locks the terminal.

Platform Description N/A

2.26 login

Use this command to enable simple login password authentication on the interface if AAA is disabled.

Use the **no** form of this command to restore the default setting.

login

no login

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Line configuration mode

Usage Guide If the AAA security server is inactive, this command enables simple password authentication at login. The password is configured for a VTY or console interface.

Configuration Examples The following example sets a login password authentication on VTY..

```
Ruijie(config)# no aaa new-model
Ruijie(config)# line vty 0
Ruijie(config-line)# password 0 normatest
Ruijie(config-line)# login
```

Related Commands

Command	Description
password	Configures the line login password

Platform Description N/A

2.27 login authentication

If the AAA is enabled, login authentication must be performed on the AAA server. Use this command to associate login authentication method list. Use the **no** form of this command to restore the default setting.

login authentication { **default |** *list-name* }

no login authentication { **default** | *list-name* }

Parameter Description

Parameter	Description
default	Name of the default authentication method list
list-name	Name of the method list

Defaults N/A

Command Mode Line configuration mode

Usage Guide If the AAA security server is active, this command is used for login authentication using the specified method list.

Configuration Examples The following example associates the method list on VTY and perform login authentication on a radius server.

```
Ruijie(config)# aaa new-model
Ruijie(config)# aaa authentication login default radius
Ruijie(config)# line vty 0
Ruijie(config-line)# login authentication default
```

Related Commands

Command	Description
aaa new-model	Enables the AAA security service.
aaa authentication login	Configures the login authentication method list.

Platform Description N/A

2.28 login local

Use this command to enable local user authentication on the interface if AAA is disabled. Use the **no** form of this command to restore the default setting.

login local
no login local

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Line configuration mode

Usage Guide If the AAA security server is inactive, this command is used for local user login authentication. The user is allowed to use the **username** command.

Configuration Examples The following example sets local user authentication on VTY.

```
Ruijie(config)# no aaa new-model
Ruijie(config)# username  test password 0 test
Ruijie(config)# line vty 0
Ruijie(config-line)# login local
```

Related Commands

Command	Description
username	Configures local user information.

Platform Description N/A

2.29 login privilege log

Use this command to log privilege change. Use the **no** form of this command to restore the default setting.
login privilege log
no login privilege log

Parameter Description

Parameter	Description
N/A	N/A

Defaults This command is disabled by default.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example enables the function of logging privilege change.

```
Ruijie(config)# login privilege log
```

The following example displays the log of privilege change failure.

```
Ruijie>enable 10

Password:
Password:
Password:

% Access denied
Ruijie>
*Sep 10 11:34:19: %SYS-5-PRIV_AUTH_FAIL: Authentication to privilege level 10 from console failed
```

The following example displays the log of privilege change success.

```
Ruijie>enable 10

Password:
Ruijie#
*Sep 10 11:34:20: %SYS-5-PRIV_AUTH_SUCCESS: Authentication to privilege level 10 from console success
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.30 motd-banner

Use this command to enable display of the MOTD message on a specified line. Use the **no** form of this command to restore the default setting.

motd-banner

no motd-banner

Parameter Description

Parameter	Description
N/A	N/A

Defaults The MOTD message is displayed on all lines by default.

Command Line configuration mode

Mode

Usage Guide After you configure the **banner exec** and the **banner motd** commands, the EXEC and the MOTD messages are displayed on all lines by default. If you want to disable display of the EXEC and the MOTD messages on a specific line, configure the **no** form of this command on the line.
This command does not work for the incoming message. If you configure the **banner incoming** command, the banner incoming message is displayed on all reverse Telnet sessions and the display cannot be disabled on a specific line.

Configuration Examples The following example disables display of the MOTD message on VTY 1.

```
Ruijie(config)# line vty 1
Ruijie(config-line)no motd-banner
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.31 password

Use this command to configure a password for line login, run the **password** command. Use the **no** form of this command to restore the default setting.
password { *password* | [**0** | **7**] *encrypted-password* }
no password

Parameter Description

Parameter	Description
password	Password for remote line login
0|7	Password encryption type, "0" for no encryption, "7" for simple encryption (Optional) Ruijie's private algorithm will be used for password encryption. If the password type is 0, the password is in plain text. If the type is 7, the password is encrypted by a Ruijie device.
encrypted-password	Password text

Defaults N/A

Command Mode Line configuration mode

Usage Guide This command is used to configure a authentication password for remote line login.

Configuration Examples The following example configures the line login password as "red".

```
Ruijie(config)# line vty 0
Ruijie(config-line)# password red
```

Related Commands

Command	Description
login	Moves from user EXEC mode to privileged EXEC mode or enables a higher level of authority.

Platform Description N/A

2.32 prompt

Use this command to set the **prompt** command. Use the **no** form of this command to restore the default setting.

prompt string

Parameter Description

Parameter	Description
string	Character string of the **prompt** command, containing up to 32 letters.

Defaults N/A

Command Mode Global configuration mode

Usage Guide If no prompt string is configured, the system name applies and varies with the system name. The **prompt** command is valid only in EXEC mode.

Configuration Examples The following example sets the prompt string to rgnos.

```
Ruijie(config)# prompt rgnos
Ruijie(config)# end
RGOS
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.33 secret

Use this command to set a password encrypted by irreversible MD5 for line login. Use the **no** form of this command to restore the default setting.

secret { [**0**] *password* | **5** *encrypted-secret* }

no secret

Parameter Description

Parameter	Description
0	(Optional) sets the plaintext password text and encrypts it with irreversible MD5 after configuration.
password	Sets the password plaintext, a string ranging from 1 to 25 characters.
5 *encrypted-secret*	Sets the password text encrypted by irreversible MD5 and saves it as the encrypted password after configuration.

Defaults N/A

Command mode Line configuration mode

Usage Guide This command is used to set a password encrypted by irreversible MD5 that is authenticated by a remote user through line login.

If the specified encryption type is 5, the logical length of the cipher text to be entered must be 24 and the 1st, 3rd and 8th characters of the password text must be $.

In general, the encryption type does not need to be specified as 5 except when the encrypted password is copied and pasted.

Line mode allows configuration of both “password” and “secret” types passwords at the same time. When the two passwords are the same, the system will send alert notification but the configuration will be permitted. When the system is configured with the two passwords, if the user enters a password that does not match the “secret” type password, it will not continue to match the “password” type password and login fails, enhancing security for the system password.

Configuration Examples The following example sets the password encrypted by irreversible MD5 for line login to vty0.

```
Ruijie(config)# line vty 0
Ruijie(config-line)# secret vty0
```

The following displays the encryption outcome by running the **show** command.

```
secret 5 $1$X834$wvx6y794uAD8svzD
```

Related Commands

Command	Description
login	Sets simple password authentication on the interface as the login authentication mode

Platform N/A

Description

2.34 session-timeout

Use this command to configure the session timeout for a remote terminal. Use the **no** form of this command to restore the default setting and the session never expires.

session-timeout *minutes* [**output**]

no session-timeout

Parameter Description

Parameter	Description
minutes	Timeout in minutes.
output	Regards data output as the input to determine whether the session expires.

Defaults The default timeout is 0.

Command Mode LINE configuration mode

Usage Guide If no input or output in current LINE mode is found on the remote terminal for the session within a specified time, this connection will expire, and this LINE will be restored to the free status.

Configuration Examples The following example specifies the timeout as 5 minutes.

```
Ruijie(config-line)#exec-timeout 5 output
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.35 show clock

Use this command to display the system time.

show clock

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to display the current system clock.

Configuration Examples The following example displays a result of the **show clock** command.

```
Ruijie# show clock
clock: 2003-3-17 10:27:21
```

Related Commands

Command	Description
clock set	Sets the system clock.

Platform Description N/A

2.36 show debugging

Use this command to display debugging state.

show debugging

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays debugging state.

```
Ruijie#show debugging

debug fw-group detect intf-state
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.37 show line

Use this command to display the configuration of a line.

show line { **console line-num** | **vty** *line-num* | *line-num* }

Parameter Description

Parameter	Description
console	Display s the configuration of a console line.
aux	Checks configuration information relating to the aux line.
vty	Display s the configuration of a vty line.
line-num	Number of the line.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command displays the configuration of a line.

Configuration Examples The following example displays the configuration of a console port.

```
Ruijie# show line console 0
CON     Type    speed   Overruns
* 0     CON     9600    45927
Line 0, Location: "", Type: "vt100"
Length: 24 lines, Width: 79 columns
Special Chars: Escape  Disconnect  Activation
             ^^x    none       ^M
Timeouts:     Idle EXEC    Idle Session
             never       never
History is enabled, history size is 10.
Total input: 53564 bytes
Total output:  395756 bytes
Data overflow:  27697 bytes
stop rx interrupt:  0 times
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.38 show reload

Use this command to display the system restart settings.

show reload

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to display the restart settings of the system.

Configuration Examples The following example displays the restart settings of the system.

```
Ruijie# show reload
Reload scheduled in 595 seconds.
At 2003-12-29 11:37:42
Reload reason: test.
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.39 show running-config

Use this command to display how the current device system is configured..

show running-config

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples N/A

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.40 show service

Use this command to display the service status.

show service

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays whether the service is enabled or disabled.

```
Ruijie# show service
web-server   : disabled
web-server(https): disabled
snmp-agent    : enabled
ssh-server    : enabled
telnet-server : disabled
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.41 show sessions

Use this command to display the Telnet Client session information.

show sessions

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode User EXEC mode

Usage Guide Telnet Client session information includes the VTY number and the server IP address.

Configuration Examples The following example displays the Telnet Client session information.

```
Ruijie#show sessions
Conn  Address
*1    127.0.0.1
*2     192.168.21.122
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.42 show startup-config

Use this command to display the device configuration stored in the Non Volatile Random Access Memory (NVRAM).

show startup-config

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide The device configuration stored in the NVRAM is executed while the device is starting.
On a device that does not support **boot config**, **startup-config** is contained in the default configuration file **/config.text** in the built-in flash memory.
On a device that supports **boot config**, configure **startup-config** as follows:
If you have specified a boot configuration file using the **boot config** command and the file exists, **startup-config** is stored in the specified configuration file.
If the boot configuration file you have specified using the **boot config** command does not exist or you have not specified a boot configuration file using the command, **startup-config** is contained in **/config.text** in the built-in flash memory.

Configuration Examples N/A

Related Commands

Command	Description
boot config	Sets the name of the boot configuration file.

Platform Description N/A

2.43 show this

Use this command to display effective configuration in the current mode.
show this

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode All modes.

Usage Guide The configuration in the following range modes can be displayed.

1. Use the **line** *first-line last-line* command to configure lines in a continuous group and enter LINE configuration mode.
2. Use the **vlan range** command to configure VLANs and enter vlan range configuration mode.
3. Use the **interface range** command to configure interfaces and enter interface range configuration mode.

In **vlan range** or **interface range** mode, if the number of VLANs or interfaces exceeds 50, only the first 50 VLANs or interfaces will be displayed by running this command.

Configuration Examples Use this command to display configuration on interface fastEthernet 0/1.

```
Ruijie (config)#interface fastEthernet 0/1
Ruijie (config-if-FastEthernet 0/1)#show this
Building configuration...
 !
 spanning-tree link-type point-to-point
 spanning-tree mst 0 port-priority 0
 !
end
Ruijie (config-if-FastEthernet 0/1)#
```

Use this command to display configuration on interface range vlan 1-3.

```
Ruijie(config-if-range)#show this

Building configuration...
!
interface VLAN 1
 ip address dhcp
interface VLAN 2
 ip address 1.1.1.1 255.255.255.0
interface VLAN 3
 ip address 3.3.3.3 255.255.255.0
!
end
Ruijie(config-if-range)#
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.44 speed

Use this command to set the speed at which the terminal transmits packets. Use the **no** form of this command to restore the default setting.

speed *speed*

no speed

Parameter Description

Parameter	Description
speed	Transmission rate (bps) on the terminal. For serial ports, optional rates include 9600, 19200, 38400, 57600, and 115200 bps. The

	default rate is 9600 bps.

Defaults The default is 9600.

Command Mode Global configuration mode

Usage Guide This command is used to set the speed at which the terminal transmits packets.

Configuration Examples The following example sets the rate of the serial port to 57600 bps.

```
Ruijie(config)# line console 0
Ruijie(config-line)# speed 57600
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.45 telnet

Use this command to log in a server that supports telnet connection.

telnet *host* [*port*] [**/source** { **ip** *A.B.C.D* | **ipv6** *X:X:X:X::X* | **interface** *interface-name* }] [**/vrf** *vrf-name*] [**via** *mgmt-name*]

Parameter Description

Parameter	Description
Host	The IP address of the host or host name you want to log in.
Port	Selects the TCP port number for login, 23 by default.
/source	Specifies the source IP address or source interface used by the Telnet client.
ip A.B.C.D	Specifies the source IPv4 address used by the Telnet client.
ipv6 X:X:X:X::X	Specifies the source IPv6 address used by the Telnet client.
interface *interface-name*	Specifies the source interface used by the Telnet client.
/vrf *vrf-name*	Specifies the VRF routing table you want to query.
via *mgmt-name*	Specifies the MGMT port for the oob option used by the Telnet client.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to log in a telnet server.

> The /**vrf** keyword only applies to the RSR series of routers.
> The /**ipv6** keyword only applies to IPv6-supported devices, such as S3760, S57 and S86.

Configuration Examples The following example sets telnet to IPv4 address 192.168.1.11. The port number is the default, and the source interface is Gi 0/1. The queried VRF routing table is vpn1.

```
Ruijie# telnet 192.168.1.11 /source-interface gigabitEthernet 0/1 /vrf vpn1
```

The following example sets telnet to IPv6 address 2AAA:BBBB::CCCC.

```
Ruijie# telnet 2AAA:BBBB::CCCC
```

The following example sets telnet to IPv4 address 192.168.1.1 and specifies the MGMT port for the oob option used by the Telnet client.

```
Ruijie# telnet oob 192.168.1.1 via mgmt 0
```

Related Commands

Command	Description
ip telnet source-interface	Specifies the IP address of the interface as the source address for Telnet connection.
show sessions	Displays the currently established Telnet sessions.
exit	Exits current connection.

Platform Description N/A

2.46 username

Use this command to set a local username and optional authorization information.. Use the **no** form of this command to restore the default setting.

username *name* [**login mode** { **aux** | **console** | **ssh** | **telnet** }] [**online amount** *number*] [**permission** *oper-mode path*] [**privilege** *privilege-level*] [**reject remote-login**] [**nopassword** | **password** [**0** | **7**] *text-string* | **secret** [**0** | **5**] *text-string*]

no username *name*

Parameter Description

Parameter	Description
name	Username
login mode	Sets the login mode.
aux	Sets the login mode to aux.
console	Sets the login mode to console.
ssh	Sets the login mode to ssh.
telnet	Sets the login mode to telnet.
online amount *number*	Sets the amount of users online simultaneously.
permission *oper-mode path*	Sets the permission on the specified file. *op-mode* refers to the

	operation mode and *path* to the file or the directory path.
privilege *privilege-level*	Sets the privilege level, in the range from 0 to 15.
reject remote-login	Confines the account to remote login.
web-auth	Confines the account to web authentication.
password [**0** | **7**] *text-string*	If the password type is 0, the password is in plain text. If the type is 7, the password is encrypted. The password is in plain text by default.
secret [**0** | **5**] *text-string*	Configures an irreversibly encrypted password. If the password type is 0, the password is in plain text. If the type is 7, the password is encrypted. The password is in plain text by default.

Defaults N/A

Command Mode Global configuration mode

Usage Guide This command is used to establish a local user database for authentication.

If encryption type is 7, the cipher text you enter should contain seven characters to be valid. In general, do not set the entryption type 7.
Instead, specify the type of encryption as 7 only when the encrypted password is copied and pasted.

Configuration Examples The following example configures a username and password and binds the user to level 15.

```
Ruijie(config)# username test privilege 15 password 0 pw15
```

The following example configures user test with read and write permissions on all files and directories.

```
Ruijie(config)# username test permission rw /
```

The following example configures user test with read, write and execute permissions on all files and directories except the confix.text file.

```
Ruijie(config)# username test permission n /config.text
Ruijie(config)# username test permission rwx /
```

Related Commands

Command	Description
login local	Enables local authentication

Platform Description N/A

2.47 username import

Use this command to import user information from the file.

username import *filename*

Parameter Description

Parameter	Description
filename	The file name.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to import user information from the file.

Configuration Examples The following example imports user information from the file.

```
Ruijie# username import user.csv
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.48 username export

Use this command to export user information to the file.

username export *filename*

Parameter Description

Parameter	Description
filename	The file name.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to export user information to the file.

Configuration Examples The following example exports user information to the file.

```
Ruijie# username export user.csv
```

Related Commands

Command	Description
N/A	N/A

Platform Description	N/A

2.49 write

Use this command to save **running-config** at a specified location.

write [**memory | terminal**]

Parameter Description

Parameter	Description
memory	Writes the system configuration (running-config) into NVRAM, which is equivalent to **copy running-config startup-config**.
terminal	Displays the system configuration, which is equivalent to **show running-config**.

Defaults	N/A
Command Mode	Privileged EXEC mode
Usage Guide	Despite the presence of alternative commands, these commands are widely used and accepted. Therefore, they are reserved to facilitate user operations. The system automatically creates the specified file and writes it into system configuration if the device that stores the file exists; The system will ask you whether to save the current configuration in default boot configuration file /config.text and perform an action as required if the device that stores the file does not exist possibly because the boot configuration file is stored on a removable storage device such as USB drive or SD card, and the device has not been loaded when you run the **write** [**memory**] command.

Configuration Examples	The following example saves **running-config** at a specified location.
	`Ruijie# write`
	`Building configuration...`
	`[OK]`

Related Commands

Command	Description
N/A	N/A

Platform Description	N/A

3 R5 Commands

3.1 r5-cpu core reload

Use this command to reboot the R5-CPU core.

r5-cpu core core*id* **reload**

Parameter Description

Parameter	Description
core*id*	R5-CPU core

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example reboots the R5-CPU core.

```
Ruijie# r5-cpu core 0 reload
R5-cpu core 0 will reload(packets which send to R5-cpu core 0 will drop when loading).
Do you want to continue? (y/n)y
R5-cpu core %d reload succeed!
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.2 show r5-cpu core status

Use this command to display the R5-CPU core status.

show r5-cpu core core*id* **status**

Parameter Description

Parameter	Description
core*id*	R5-CPU core

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide N/A

Configuration Examples The following example displays the R5-CPU core status.

```
Ruijie#show r5-cpu core 0 status
Status    UsedFor    Last boot                Reason
--------  ---------  -------------------------  --------------
OK       IFA       Sat Sep 29 15:05:53 2018    First start up
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.3 show r5-cpu core statistics

Use this command to display the R5-CPU core statistics.

show r5-cpu core core*id* **statistics**

Parameter Description

Parameter	Description
core*id*	R5-CPU core

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide N/A

Configuration Examples The following example displays the R5-CPU core statistics.

```
Ruijie#show r5-cpu core 0 statistics
InPkts:  0
OutPkts: 0
Drop packets event(due to missing config):            1352
Drop packets event(due to missing collector config):    0
Drop packets event(due to hop_cnt invalid):           0
Drop packets event(due to INT_head_len_invalid):       0
```

```
Drop packets event(due to Pkt_size_invalid):          0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.4 show r5-cpu core boot-history

Use this command to display reboot history of the R5-CPU core.

show r5-cpu core core*id* **boot-history**

Parameter Description

Parameter	Description
core*id*	R5-CPU core

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide N/A

Configuration Examples The following example displays reboot history of the R5-CPU core.

```
Ruijie# show r5-cpu core 0 boot-history
Boot time                Reason
-----------------------------------------------
Sat Sep 29 22:05:37 2018   First start up
Sat Sep 29 20:30:58 2018   First start up
Sat Sep 29 16:56:55 2018   Manually reload
Sat Sep 29 16:06:20 2018   Manually reload
Sat Sep 29 15:52:27 2018   First start up
Sat Sep 29 15:05:53 2018   First start up
Sat Sep 29 14:51:26 2018   First start up
Sat Sep 29 10:25:41 2018   First start up
Sat Sep 29 09:25:41 2018   Internal Crashed
```

Related Commands

Command	Description
N/A	N/A

Platform N/A

Description

3.5 show r5-cpu core queue-buffer

Use this command to display mmu-buffer usage of the R5-CPU core.

show r5-cpu core core*id* **queue-buffer**

Parameter Description

Parameter	Description
core*id*	R5-CPU core

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide N/A

Configuration Examples The following example displays mmu-buffer usage of the R5-CPU core.

```
Ruijie#Ruijie#show r5-cpu  core 0 queue-buffer
Slice 1:
Queue  Used cells  Available cells  Usage  Peaked cells
-----  ----------  ---------------  -----  ------------
46    14          86               14%    0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.6 clear r5-cpu core statistics

Use this command to clear the R5-CPU core statistics

clear r5-cpu core core*id* **statistics**

Parameter Description

Parameter	Description
core*id*	R5-CPU core

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide N/A

Configuration Examples The following example clears the R5-CPU core statistics

```
Ruijie#clear r5-cpu core 0 statistics
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.7 clear r5-cpu core boot-history

Use this command to clear reboot history of the R5-CPU core statistics

clear r5-cpu core core*id* **boot-history**

Parameter Description

Parameter	Description
core*id*	R5-CPU core

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide N/A

Configuration Examples The following example clears reboot history of the R5-CPU core.

```
Ruijie#clear r5-cpu core 0 boot-history
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.8 clear r5-cpu core queue-buffer counter

Use this command to clear mmu-buffer usage of the R5-CPU core.

clear r5-cpu core core*id* **queue-buffer counter**

Parameter Description

Parameter	Description
core*id*	R5-CPU core

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example clears mmu-buffer usage of the R5-CPU core.

```
Ruijie#clear r5-cpu core 0 queue-buffer counter
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4 LINE Commands

4.1 access-class

Use this command to control login into the terminal through IPv4 ACL. Use the **no** form of this command to restore the default setting.

access-class { *access-list-number* | *access-list-name* } { **in | out** }

no access-class { *access-list-number* | *access-list-name* } { **in | out** }

Parameter Description

Parameter	Description
access-list-number	Specifies the ACL number. Standard IP ACL number is from 1 to 99 and from 1300 to 1999. Extended IP ACL number is from 100 to 199 and from 2000 to 2699.
access-list-name	Specifies the ACL name.
in	Filters the incoming connections.
out	Filters the outgoing connections.

Defaults N/A

Command Mode Line configuration mode

Usage Guide N/A

Configuration Examples The following example uses ACL 20 to filter the incoming connections in line VTY 0 5.

```
Ruijie(config)# line vty 0 5
Ruijie(config-line)#access-class 20 in
```

The following example uses the ACL named “test” to filter the outgoing connections in line VTY 6 7.

```
Ruijie(config)# line vty 6 7
Ruijie(config-line)#access-class test out
```

Related Commands

Command	Description
show running	Displays status information

Platform Description N/A

4.2 accounting commands

Use this command to enable command accounting in the line. Use the **no** form of this command to restore the default setting.

accounting commands *level* { **default** | *list-name* }

no accounting commands *level*

Parameter Description

Parameter	Description
level	Command level ranging from 0 to 15. The command of this level is accounted when it is executed.
default	Default authorization list name.
list-name	Optional list name.

Defaults This function is disabled by default.

Command Mode Line configuration mode

Usage Guide This function is used together with AAA authorization. Configure AAA command accounting first, and then apply it on the line.

Configuration Examples The following example enables command accounting in line VTY 1 and sets the command level to 15.

```
Ruijie(config)# aaa new-model
Ruijie(config)# aaa accounting commands 15 default start-stop group tacacs+
Ruijie(config)# line vty 1
Ruijie(config-line)# accounting commands 15 default
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.3 accounting exec

Use this command to enable user access accounting in the line. Use the **no** form of this command to restore the default setting.

accounting commands *level* { **default** | *list-name* }

no accounting commands *level*

Parameter

Parameter	Description

Description

level	Command level ranging from 0 to 15. The command of this level is accounted when it is executed.
default	Default authorization list name.
list-name	Optional list name.

Defaults This function is disabled by default.

Command Mode Line configuration mode

Usage Guide This function is used together with AAA authorization. Configure AAA EXEC accounting first, and then apply it on the line.

Configuration Examples The following example enables user access accounting in line VTY 1.

```
Ruijie(config)# aaa new-model
Ruijie(config)# aaa accounting exec default start-stop group radius
Ruijie(config)# line vty 1
Ruijie(config-line)# accounting exec default
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.4 authorization commands

Use this command to enable authorization on commands, Use the **no** form of this command to restore the default setting.

authorization commands *level* { **default** | *list-name* }

no authorization commands *level*

Parameter Description

Parameter	Description
level	Command level ranging from 0 to 15. The command of this level is executed after authorization is performed.
default	Default authorization list name,
list-name	Optional list name.

Defaults This function is disabled by default.

Command Mode Line configuration mode

Usage Guide This function is used together with AAA authorization. Configure AAA authorization first, and then apply it on the line.

Configuration Examples The following example enables authorization on commands of level 15 in line VTY 1.

```
Ruijie(config)# aaa new-model
Ruijie(config)# aaa authorization commands 15 default group tacacs+
Ruijie(config)# line vty 1
Ruijie(config-line)# authorization commands 15 default
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.5 authorization exec

Use this command to enable EXEC authorization for the line. Use the **no** form of this command to restore the default setting.

authorization exec { **default** | *list-name* }

no authorization exec

Parameter Description

Parameter	Description
default	Default authorization list name,
list-name	Optional list name.

Defaults This function is disabled by default,

Command Mode Line configuration mode

Usage Guide This function is used together with AAA authorization. Configure AAA EXEC authorization first, and then apply it on the line.

Configuration Examples The following example performs EXEC authorization to line VTY 1.

```
Ruijie(config)# aaa new-model
Ruijie(config)# aaa authorization exec default group radius
Ruijie(config)# line vty 1
Ruijie(config-line)# authorization exec default
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.6 clear line

Use this command to clear connection status of the line.

clear line { **aux** *line-num* | **console** *line-num* | **tty** *line-num* | **vty** *line-num* **|** *line-num* }

Parameter Description

Parameter	Description
aux	Clears connection status of auxiliary port line. This parameter is on routers generally.
console	Clears connection status of the console line.
tty	Clears connection status of the asynchronous port line. This parameter is on routers generally.
vty	Clears connection status of the virtual terminal line.
line-num	Specifies the line to be cleared.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to clear connection status of the line and restore the line to the unoccupied status to create new connections.

Configuration Examples The following example clears connection status of line VTY 13. The connected session on the client (such as Telnet and SSH) in the line is disconnected immediately.

```
Ruijie# clear line vty 13
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.7 disconnect-character

Use this command to set the hot key that disconnects the terminal service connection. Use the **no** form of this command to restore the default setting.

disconnect-character *ascii-value*

no disconnect-character

Parameter Description

Parameter	Description
ascii-value	ASCII decimal value of the hot key that disconnects the terminal service connection, in the range from 0 to 255.

Defaults The default hot key is **Ctrl+D** and the ASCII decimal value is 0x04.

Command Mode Line configuration mode

Usage Guide This command is used to set the hot key that disconnects the terminal service connection. The hot key cannot be the commonly used ASCII node such as characters ranging from a to z, from A to Z or numbers ranging from 0 to 9. Otherwise, the terminal service cannot operate properly.

Configuration Examples The following example sets the hot key that disconnects the terminal service connection on line VTY 0 5 to **Ctrl+E** (0x05).

```
Ruijie(config)# line vty 0 5
Ruijie(config-line)# disconnect-character 5
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.8 escape-character

Use this command to set the escape character for the line. Use the **no** form of this command to restore the default setting.

escape-character *escape-value*

no escape-character

Parameter Description

Parameter	Description
escape-value	Sets the ASCII value corresponding to the escape character for the

	line, in the range from 0 to 255.

Defaults The default escape character is **Ctrl+^** (**Ctrl+Shift+6**) and the ASCII decimal value is 30.

Command Mode Line configuration mode

Usage Guide After configuring this command, press the key combination of the escape character and then press **x**, the current session is disconnected to return to the original session.

Configuration Examples The following example sets the escape character for the line to 23 (**Ctrl+w**).

```
Ruijie(config)# line vty 0
Ruijie(config-line)# escape-character 23
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.9 exec

Use this command to enable the line to enter the command line interface. Use the **no** form of this command to disable the function.

exec

no exec

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode Line configuration mode

Usage Guide The **no exec** command is used to ban the line from entering the command line interface. You have to enter the command line interface through other lines,

Configuration Examples The following example bans line VTY 1 from entering the command line interface.

```
Ruijie(config)# line vty 1
Ruijie(config-line)# no exec
Ruijie# show users
```

```
Line           User       Host(s)            Idle      Location
---------------- ------------ -------------------- ----------
------------------
*  0 con 0      ---        idle              00:00:00   ---
   1 vty 0      ---        idle              00:01:03   20.1.1.2
    3 vty 2       ---          idle                00:00:13   20.1.1.2
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.10 history

Use this command to enable command history for the line or set the number of commands in the command history. Use the **no history** command to disable command history. Use the **no history size** command to restore the number of commands in the command history to the default setting.

history [**size** *size*]

no history

no history size

Parameter Description

Parameter	Description
size *size*	The number of commands, in the range from 0 to 256.

Defaults This function is enabled by default, The default *size* is 10.

Command Mode Line configuration mode

Usage Guide N/A

Configuration Examples The following example sets the number of commands in the command history to 20 for line VTY 0 5.

```
Ruijie(config)# line vty 0 5
Ruijie(config-line)# history size 20
```

The following example disables the command history for line VTY 0 5.

```
Ruijie(config)# line vty 0 5
Ruijie(config-line)# no history
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.11 ipv6 access-class

Use this command to configure access to the terminal through IPv6 ACL. Use the **no** form of this command to restore the default setting.

ipv6 access-class *access-list-name* { **in** | **out** }

no ipv6 access-class *access-list-name* { **in** | **out** }

Parameter Description

Parameter	Description
access-list-name	Specifies the ACL name.
in	Filters the incoming connections.
out	Filters the outgoing connections.

Defaults N/A

Command Mode Line configuration mode

Usage Guide N/A

Configuration Examples The following example uses the ACL named “test” to filter the outgoing IPv6 connections in line VTY 0 4.

```
Ruijie(config)# line vty 0 4
Ruijie(config-line)#ipv6 access-class test out
```

Related Commands

Command	Description
show running	Displays status information

Platform Description N/A

4.12 length

Use this command to set the screen length for the line. Use the **no** form of this command to restore the default setting.

length *screen-length*

no length

Parameter Description

Parameter	Description
screen-length	Sets the screen length, in the range from 0 to 512.

Defaults The default is 24.

Command Mode Line configuration mode

Usage Guide N/A

Configuration Examples The following example sets the screen length to 10.

```
Ruijie(config-line)# length 10
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.13 line

Use this command to enter the specified LINE mode.

line [**aux** | **console** | **tty | vty**] *first-line* [*last-line*]

Parameter Description

Parameter	Description
aux	Auxiliary port, on the routers.
console	Console port
tty	Asynchronous port, on the routers.
vty	Virtual terminal line, applicable for telnet/ssh connection.
first-line	Number of first-line to enter

Defaults N/A

Command Mode Global configuration mode

Usage Guide This command is used to enter the specified LINE mode.

Configuration Examples The following example enters the LINE mode from LINE VTY 1 to 3:

```
Ruijie(config)# line vty 1 3
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.14 line vty

Use this command to increase the number of VTY connections currently available. Use the **no** form of this command to restore the default setting.

line vty *line-number*

no line vty *line-number*

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, there are five available VTY connections, numbered 0 to 4.

Command Mode Global configuration mode.

Usage Guide When you need to increase or decrease the number of available VTY connections, use the above commands.

Configuration Examples The following example increases the number of available VTY connections to 20. The available VTY connections are numbered 0 to 19.

```
Ruijie(config)# line vty 19
Decrease the number of available VTY connections to 10. The available VTY
connections are numbered 0-9.
Ruijie(config)# line vty 10
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.15 location

Use this command to configure the line location description. Use the **no** form of this command to restore the default setting.

location *location*

no location

Parameter Description

Parameter	Description
location	Line location description

Defaults N/A

Command Mode Line configuration mode

Usage Guide N/A

Configuration Examples The following example describes the line location as Swtich's Line VTY 0.

```
Ruijie(config)# line vty 0
Ruijie(config-line)# location Swtich's Line Vty 0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.16 monitor

Use this command to enable log display on the terminal. Use the **no** form of this command to restore the default setting,

monitor

no monitor

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Line configuration mode

Mode

Usage Guide N/A

Configuration Examples The following example enables log display on the terminal in VTY line 0 5.

```
Ruijie(config)# line vty 0 5
Ruijie(config-line)# monitor
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.17 privilege level

Use this command to set the privilege level for the line. Use the **no** form of this command to restore the default setting.

privilege level *level*

no privilege level

Parameter Description

Parameter	Description
level	Privilege level, in the range from 0 to 15.

Defaults The default is 1.

Command Mode Line configuration mode

Usage Guide N/A

Configuration Examples The following example sets the privilege level for the line VTY 0 4 to 14.

```
Ruijie(config)# line vty 0 4
Ruijie(config-line)#privilege level 14
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.18 show history

Use this command to display the command history of the line.

show history

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the command history of the line.

```
Ruijie# show history
exec:
sh privilege
sh run
show user
sh user all
show history
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.19 show line

Use this command to display line configuration.

show line { **aux** *line-num* | **console** *line-num* | **tty** *line-num* | **vty** *line-num* **|** *line-num* }

Parameter Description

Parameter	Description
aux	Displays configuration for the auxiliary port line. This parameter is on routers generally.
console	Displays configuration for the console line.
tty	Displays configuration for the asynchronous port line.

	This parameter is on routers generally.
vty	Displays configuration for the virtual terminal line.
line-num	Displays the line.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays configuration for the console port.

```
Ruijie# show line console 0
CON     Type    speed   Overruns
* 0     CON     9600    45927
Line 0, Location: "", Type: "vt100"
Length: 24 lines, Width: 79 columns
Special Chars: Escape  Disconnect  Activation
             ^^x    none       ^M
Timeouts:     Idle EXEC    Idle Session
             never       never
History is enabled, history size is 10.
Total input: 53564 bytes
Total output:  395756 bytes
Data overflow:  27697 bytes
stop rx interrupt:  0 times
```

Field	Description
CON	Terminal type. CON indicates console; 0 indicates terminal line number and * ahead of the number means that the terminal is in use.
Type	Terminal type, including CON, AUX, TTY, and VTY.
speed	Asynchronous speed.
Overruns	The number of overrun errors received by the flash.
Line 0	Terminal line number.
Location: ""	Line location configuration.
Type: "vt100"	Compatibility standard.
Special Chars	Special characters, including Escape, Disconnect, and Activation characters.
Timeouts	Timeout value; “never” indicates no timeout.
History	Whether to enable command history; the number of commands in the command history.
Total input	Data volume received from the drive.
Total output	Date volume sent to the drive.
Data overflow	Overflowing data volume.
stop rx interrupt	Data reception interruption times.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.20 show privilege

Use this command to display the privilege level of the line.

show privilege

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the privilege level of the line.

```
Ruijie# show privilege
Current privilege level is 10
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.21 show users

Use this command to display the login user information.

show users [**all**]

Parameter Description

Parameter	Description
all	Displays line user information, including users logging into the line

	and users not logging into the line.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the information about users logging into the line,

```
Ruijie# show users
Line           User       Host(s)            Idle      Location
---------------- ------------ -------------------- ----------
------------------
  0 con 0      ---        idle              00:00:46   ---
  1 vty 0      ---        idle              00:00:29   20.1.1.2
*  2 vty 1      ---        idle              00:00:00   20.1.1.2
```

The following example displays all line user information,

```
Ruijie(config)# show users all
Line           User       Host(s)            Idle      Location
---------------- ------------ -------------------- ----------
------------------
  0 con 0      ---        idle              00:00:49   ---
  1 vty 0      ---        idle              00:00:32   20.1.1.2
*  2 vty 1      ---        idle              00:00:00   20.1.1.2
  3 vty 2      ---                          00:00:00   ---
  4 vty 3      ---                          00:00:00   ---
  5 vty 4      ---                          00:00:00   ---
   6 vty 5       ---                                00:00:00   ---
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.22 speed

Use this command to configure the baud rate for the specified line. Use the **no** form of this command to restore the default setting,

speed *baudrate*

no speed

Parameter Description

Parameter	Description
baudrate	Sets the baud rate, in the range from 9600 to 115200.

Defaults The default is 9600.

Command Mode LINE configuration mode

Usage Guide N/A

Configuration Examples The following example sets the baud rate to 115200,

```
Ruijie(config-line)# speed 115200
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.23 terminal escape-character

Use this command to set the escape character for the current terminal. Use the **no** form of this command to restore the default setting.

terminal escape-character *escape-value*

terminal no escape-character

Parameter Description

Parameter	Description
escape-value	Sets the ASCII value corresponding to the escape character for the current terminal, in the range from 0 to 255.

Defaults The default escape character is **Ctrl+^** (**Ctrl+Shift+6**) and the ASCII decimal value is 30.

Command Mode Privileged EXEC mode

Usage Guide After configuring this command, press the key combination of the escape character and then press **x**, the current session is disconnected to return to the original session.

Configuration Examples The following example sets the escape character for the current terminal to 23 (**Ctrl+w**).

```
Ruijie# terminal escape-character 23
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.24 terminal history

Use this command to enable command history for the current terminal or set the number of commands in the command history. Use the **no history** command to disable command history. Use the **no history size** command to restore the number of commands in the command history to the default setting.

terminal history [**size** *size*]

terminal no history

terminal no history size

Parameter Description

Parameter	Description
size *size*	Sets the number of commands, in the range from 0 to 256.

Defaults This function is enabled by default, The default *size* is 10.

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example sets the number of commands in the command history to 20 for the current terminal.

```
Ruijie# terminal history size 20
```

The following example disables the command history for the current terminal.

```
Ruijie# terminal no history
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.25 terminal length

Use this command to set the screen length for the current terminal. Use the **no** form of this command to restore the default setting.

terminal length *screen-length*

terminal no length

Parameter Description

Parameter	Description
screen-length	Sets the screen length, in the range from 0 to 512.

Defaults The default is 24.

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example sets the screen length for the current terminal to 10.

```
Ruijie# terminal length 10
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.26 terminal location

Use this command to configure location description for the current device. Use the **no** form of this command to restore the default setting.

terminal location *location*

terminal no location

Parameter Description

Parameter	Description
location	Configures location description of the current device.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example configures location description of the current device as “Swtich’s Line Vty 0”.

```
Ruijie# terminal location Swtich’s Line Vty 0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.27 terminal speed

Use this command to configure the baud rate for the current terminal. Use the **no** form of this command to restore the default setting,

terminal speed *baudrate*

terminal no speed

Parameter Description

Parameter	Description
baudrate	Sets the baud rate, in the range from 9600 to 115200.

Defaults The default is 9600.

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example sets the baud rate for the current terminal to 115200,

```
Ruijie# terminal speed 115200
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.28 terminal width

Use this command to set the screen width for the terminal.

terminal width *screen-width*

terminal no width

Parameter Description

Parameter	Description
screen-width	Sets the screen width for the terminal, in the range from 0 to 256.

Defaults The default is 79.

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example sets the screen width for the terminal to 10.

```
Ruijie# terminal width 10
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.29 timeout login

Use this command to set the login authentication timeout for the line. Use the **no** form of this command to restore the default setting.

timeout login response *seconds*

no timeout login response

Parameter Description

Parameter	Description
response	The time period during which the line waits for the user to enter any message.
seconds	Timeout value, in the range from 1 to 300 in the unit of seconds.

Defaults The default is 30.

Command Line configuration mode

Mode

Usage Guide N/A

Configuration Examples The following example sets the login authentication timeout to 300 seconds for line VTY 0 5.

```
Ruijie(config)# line vty 0 5
Ruijie(config-line)# timeout login response 300
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.30 transport input

Use this command to set the specified protocol under Line that can be used for communication. Use the **no** form of this command to restore the default setting.

transport input { **all** | **ssh** | **telnet | none** }

no transport input { **all** | **ssh** | **telnet** | **none** }

Parameter Description

Parameter	Description
all	Allows all the protocols under Line to be used for communication
ssh	Allows only the SSH protocol under Line to be used for communication
telnet	Allows only the Telnet protocol under Line to be used for communication
none	Allows none of protocols under Line to be used for communication

Defaults **all**, **ssh** and **telnet** protocols are allowed.

Command Mode Line configuration mode

Usage Guide N/A

Configuration Examples The following example specifies that only the Telnet protocol is allowed to login in line vty 0 4.

```
Ruijie(config)# line vty 0 5
Ruijie(config-line)#transport input ssh
```

Related Commands

Command	Description

show running	Displays status information

Platform Description N/A

4.31 vacant-message

Use this command to set the logout message. Use the **no** form of this command to restore the default setting.

vacant-message [*c message c*]

no vacant-message

Parameter Description

Parameter	Description
c	Delimiter of the logout message, which is not allowed within the message.
message	Logout message.

Defaults N/A

Command Mode Line configuration mode

Usage Guide This command is used to set the logout message for the line. The characters entered after the ending delimiter are discarded directly, The logout message is displayed when the user logs out.

Configuration Examples The following example sets the logout message to “Logout from the ruijie device”.

```
Ruijie(config-line)#vacant-message @ Logout from the ruijie device @
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.32 width

Use this command to set the screen width for the line. Use the **no** form of this command to restore the default setting,

width *screen-width*

no width

Parameter Description

Parameter	Description
screen-width	Sets the screen width for the line, in the range from 0 to 256,

Defaults The default is 79.

Command Mode Line configuration mode

Usage Guide N/A

Configuration Examples The following example sets the screen width for the line to 10.

```
Ruijie(config-line)# width 10
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5 File System Commands

5.1 cd

Use this command to set the present directory for the file system.

cd *[filesystem:] [directory]*

Parameter Description

Parameter	Description
filesystem:	The URL of filesystem, followed by a colon (:). The filesystem includes **flash:**, **usb:**, and **tmp:**.
directory	The path name. A file name starts with "/" is an absolute path. Otherwise, it is a relative path.

Defaults The default directory is the flash root directory.

Command Mode Privileged EXEC mode.

Usage Guide The specified path of the file system support URLs. For details of URL prefixes, see description of the **copy** command.

Change the above parameter to the directory you want to enter. Use the **pwd** command to view the present directory.

Configuration Examples

```
N/A
```

Related Commands

Command	Description
pwd	Displays the present word directory.

Platform Description N/A.

5.2 copy

Use this command to copy a file from the specified source directory to the specified destination directory.

copy *source-url destination-url* [*vrf_name*]

Parameter Description

Parameter	Description
source-url	Source file URL, which can be local or remote.
destination-url	Destination file URL, which can be local or remote.
vrf_name	Specifies a VRF.

Defaults N/A.

Command Mode Privileged EXEC mode.

Usage Guide when the file to be copied exists on the target URL, the target file system determines the action, such as error report, overwrite, or offering you the choice.

The following table lists the URL:

Prefix	Description
running-config	Running configuration file.
startup-config	startup configuration file.
flash:	local FLASH file system.
tftp:	The URL of TFTP server, in the format as follows: **tftp**:[[//location]/directory]**/filename**
oob_tftp: [**via mgmt.** { *number* }]	The URL of TFTP server connected with the Out-of-Band port. If there are multiple MGMT ports, you can specify one.
http:	The URL of TFTP server, in the format as follows: **http**:[[//location]/directory]**/filename**
oob_http:	The URL of HTTP server connected with the Out-of-Band port

Configuration Examples The following example copies the netconfig file from device 192.168.64.2 to the FLASH disk and the netconfile file exists locally.

```
Do you want to overwrite [/data/netconfig]? [Y/N]:y
Press Ctrl+C to quit
!
Copy success.
```

Related Commands

Command	Description
delete	Deletes the file.
rename	Renames the file.
dir	Displays the file list of the specified directory.

Platform Description N/A

5.3 delete

Use this command to delete the files in the present directory.

delete [*filesystem*:] *file-url*

Parameter Description

Parameter	Description
filesystem:	The URL of file system, followed by a colon (:). The file system includes **flash:**, **usb:**, and **tmp:**.
file-url	The file name containing the path. A file name starts with "/" is an absolute path. Otherwise, it is a relative path.

Defaults The default *filesystem*: is **flash:**.

Command Mode Privileged EXEC mode.

Usage Guide This command is used to delete the specified file in the URL. This command supports deleting the files stores in the local storage media, i.e., the URL must be one of the flash:/ usb0:/ or usb1:/ slave:/. If the prefix is not specified in the URL, it indicates to delete the file in the system.
In VSU mode, URLs do not support sw1-m1-disk0:/ series. For details of the supported prefixes, see the description of the **copy** command.
This command does not support wildcard.

Configuration Examples The following example deletes the fstab file on the FLASH disk.

```
Ruijie#pwd
flash:/
Ruijie#dir
Directory of flash:/
1   -rw-       336   Jan 03 2012 18:53:42  fstab
2   -rw-      4096   Jan 03 2012 12:32:09  rc.d
3   -rw-  10485760   Jan 03 2012 18:13:37  rpmdb
3 files, 0 directories
10,490,192 bytes total (13,192,656 bytes free)
Ruijie#delete flash:/fstab
Do you want to delete [flash:/fstab]? [Y/N]:y
Delete success.
Ruijie#dir
Directory of flash:/
1   -rw-      4096   Jan 03 2012 12:32:09  rc.d
2   -rw-  10485760   Jan 03 2012 18:13:37  rpmdb
2 files, 0 directories
10,489,856 bytes total (13,192,992 bytes free)
```

Related Commands

Command	Description
copy	Copies the file.
dir	Displays the file list of the specified directory.

Platform Description N/A

5.4 dir

Use this command to display the files in the present directory.

dir [*filesystem*:] [*directory*]

Parameter Description

Parameter	Description
filesystem	The URL of file system, followed by a colon (:). The file system includes **flash:**, **usb:**, and **tmp:**.
directory	The path name. A file name starts with "/" is an absolute path. Otherwise, it is a relative path.

Defaults By default, only the information under the present working path is displayed.

Command Mode Privileged EXEC mode.

Usage Guide Enter the specified directory to show the information of all the files in that directory. If no parameter is specified, the information of the files in the present directory is shown by default.
This command does not support wildcard.

Configuration Examples The following example displays the file information of the root directory in the FLASH disk.

```
Ruijie#dir flash:/
Directory of flash:/
1   -rw-       336   Jan 03 2012 18:53:42  fstab
2   -rw-      4096   Jan 03 2012 12:32:09  rc.d
3   -rw-  10485760   Jan 03 2012 18:13:37  rpmdb
3 files, 0 directories
10,490,192 bytes total (13,192,656 bytes free)
```

Field	Description
1, 2, 3…	Index number
-rw-	Permissions on a file include: ● d: directory ● r: read ● w: write ● x: executable
10485760	File size
rpmdb	File name
files	File number
directories	Directory number
total	Total size

free	Available space

Related Commands	Command	Description
	pwd	Displays the present directory.
	cd	Sets the present directory of the file system.

Platform Description N/A.

5.5 erase

Use this command to erase the device or file that does't have a file system.

erase *filesystem*

Parameter Description	Parameter	Description
	filesystem:	Name of the file system, followed by a colon (:). For example, usb0:.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example erases the USB filesystem.

```
Ruijie#erase usb0:
Sure to erase usb0:? [Y/N] y
Erasing disk usb0 …
Erase disk usb0 done!
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

5.6 eject

Use this command to remove the USB or SD disk.

eject [**usb0**]

Parameter	Parameter	Description

Description	N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example removes the USB disk.

```
Ruijie#eject ?
  sd0   Eject sd disk 0
  usb0  Eject usb disk 0

Ruijie#eject usb0
Ruijie#
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

5.7 file

Use this command to display the information about a file.

file [*filesystem*:] *file-url*

Parameter Description	Parameter	Description
	filesystem:	The URL of file system, followed by a colon (:). The file system includes **flash:**, **usb:**, and **tmp:**.
	file-url	The file name containing the path. A file name starts with "/" is an absolute path. Otherwise, it is a relative path.

Defaults The default *filesystem*: is **flash:**.

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the information about gcc executable file.

```
Ruijie#file flash:/gcc
/usr/bin/gcc-4.6: ELF 32-bit LSB executable, Intel 80386, version 1 (SYSV),
```

```
dynamically linked (uses shared libs), for GNU/Linux 2.6.15, stripped
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

5.8 file prompt

Use this command to set the prompt mode.

file prompt [**noisy** | **quiet**]

Parameter Description	Parameter	Description
	noisy	Displays prompt for all operation.
	quiet	Displays prompt rarely.

Defaults The default mode is noisy.

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example sets the prompt mode to noisy.

```
Ruijie#file prompt noisy
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

5.9 mkdir

Use this command to create a directory.

mkdir [*filesystem*:] *directory*

Parameter Description	Parameter	Description
	filesystem:	The URL of file system, followed by a colon (:). The file system includes **flash:**, **usb:**, and **tmp:**.
	directory	The path name. A file name starts with “/” is an absolute path. Otherwise, it is a relative path.

Defaults The default *filesystem*: is **flash**:.
The default *directory* is the root directory.

Command Mode Privileged EXEC mode.

Usage Guide Simply enter the name of the directory you want to create (including the path).

If the created file has been existed, the creation will fail. If the upper-level for the directory to be created is inexistent, it fails to create the specified directory. For example, if the directory of flash:/backup is inexistent, the creation of the directory of flash:/backup/temp will fail. The solution is that the directory of flash:/backup shall be created before the creation of the directory of flash:/backup/temp.

Configuration Examples The following example creates a directory named newdir:

```
Ruijie#dir
Directory of flash:/
1   -rw-       336   Jan 03 2012 18:53:42  fstab
2   -rw-      4096   Jan 03 2012 12:32:09  rc.d
3   -rw-  10485760   Jan 03 2012 18:13:37  rpmdb
3 files, 0 directories
10,490,132 bytes total (13,192,656 bytes free)
Ruijie#mkdir newdir
Created dir flash:/newdir
Ruijie#dir
Directory of flash:/
1   -rw-       336   Jan 03 2012 18:53:42  fstab
2   -rw-      4096   Jan 03 2012 12:32:09  rc.d
3   -rw-  10485760   Jan 03 2012 18:13:37  rpmdb
4   drw-      4096   Jan 03 2012 18:13:37  newdir
3 files, 1 directories
10,494,228 bytes total (13,188,560 bytes free)
```

Related Commands

Command	Description
rmdir	Deletes the directory.
pwd	Displays the present directory.

Platform Description N/A

5.10 more

Use this command to display the content of a file.

more [**/ascii** | **/binary**] [*filesystem*:] *file-url*

Parameter Description

Parameter	Description
/ascii	Displays the file content in the ASCII format.
/binary	Displays the file content in the
filesystem:	The URL of file system, followed by a colon (:). The file system includes **flash:**, **usb:**, and **tmp:**.
file-url	The file name containing the path. A file name starts with "/" is an absolute path. Otherwise, it is a relative path.

Defaults The file is displayed in its own format by default.

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the content of the netconfig file under root directory of FLASH disk.

```
Ruijie#more flash:/netconfig
#
# The network configuration file. This file is currently only used in
# conjunction with the TI-RPC code in the libtirpc library.
#
# Entries consist of:
#
#      <network_id> <semantics> <flags> <protofamily> <protoname> \
#             <device> <nametoaddr_libs>
#
# The <device> and <nametoaddr_libs> fields are always empty in this
# implementation.
#
udp       tpi_clts     v    inet    udp    -      -
tcp       tpi_cots_ord  v    inet    tcp    -      -
udp6      tpi_clts     v    inet6   udp    -      -
tcp6      tpi_cots_ord  v    inet6   tcp    -      -
rawip     tpi_raw      -    inet     -     -      -
local     tpi_cots_ord  -    loopback  -     -      -
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.11 pwd

Use this command to display the working path.

pwd

Parameter Description

Parameter	Description
N/A.	N/A.

Defaults N/A.

Usage Guide This command displays the present working path

Configuration Examples

```
N/A
```

Related Commands

Command	Description
cd	Changes the file system in the present directory.

Platform Description N/A.

5.12 rename

Use this command to move or rename the specified file.

rename *src-url dst-url*

Parameter Description

Parameter	Description
src-url	The source file URL to move.
dst-url	The URL of the destination file or directory.

Defaults N/A.

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example renames the fstab file in the root directory on the FLASH disk as new-fstab.

```
Ruijie#dir
Directory of flash:/
```

```
1   -rw-       336   Jan 03 2012 18:53:42  fstab
2   -rw-      4096   Jan 03 2012 12:32:09  rc.d
3   -rw-   10485760   Jan 03 2012 18:13:37  rpmdb
3 files, 0 directories
10,490,192 bytes total (13,192,656 bytes free)
Ruijie#rename flash:/fstab flash:/new-fstab
Renamed file flash:/new-fstab
Ruijie#dir
Directory of flash:/
1   -rw-       336   Jan 03 2012 18:53:42  new-fstab
2   -rw-      4096   Jan 03 2012 12:32:09  rc.d
3   -rw-   10485760   Jan 03 2012 18:13:37  rpmdb
3 files, 0 directories
10,490,192 bytes total (13,192,656 bytes free)
```

Related Commands

Command	Description
delete	Deletes the file.
copy	Copies the file.

Platform Description N/A

5.13 rmdir

Use this command to delete an empty directory.

rmdir [*filesystem*:] *directory*

Parameter Description

Parameter	Description
filesystem:	The URL of file system, followed by a colon (:). The file system includes **flash:**, **usb:**, and **tmp:**.
directory	The path name. A file name starts with “/” is an absolute path. Otherwise, it is a relative path.

Defaults The default *filesystem*: is **flash:**.

Command Mode Privileged EXEC mode.

Usage Guide This command does not support the wildcards, and the directory to be deleted must be empty. Since this command supports abbreviations, you can also use the **rm** command to delete empty directories.

Configuration Examples The following example deletes the null test directories.

```
Ruijie#mkdir newdir
Ruijie#dir
```

```
Directory of flash:/
1   -rw-       336   Jan 03 2012 18:53:42  fstab
2   -rw-      4096   Jan 03 2012 12:32:09  rc.d
3   -rw-   10485760   Jan 03 2012 18:13:37  rpmdb
4   drw-      4096   Jan 03 2012 18:13:37  newdir
3 files, 1 directories
10,494,228 bytes total (13,188,560 bytes free)
Ruijie#rmdir newdir
removed dir flash:/newdir
Ruijie#dir
Directory of flash:/
1   -rw-       336   Jan 03 2012 18:53:42  fstab
2   -rw-      4096   Jan 03 2012 12:32:09  rc.d
3   -rw-   10485760   Jan 03 2012 18:13:37  rpmdb
3 files, 0 directories
10,490,132 bytes total (13,192,656 bytes free)
```

Related Commands	Command	Description
	N/A.	N/A.

Platform Description N/A.

5.14 show file systems

Use this command to display the file system information.

show file systems

Parameter Description	Parameter	Description
	N/A.	N/A.

Defaults N/A.

Command Mode Privileged EXEC mode/User configuration mode/Global configuration mode/Interface configuration mode

Usage Guide Use this command to display the file systems supported in the present devices and the available space condition in the file system.

Configuration Examples The following example displays the file system information:

```
Ruijie#show file systems
  Size(KB)      Free(KB)    Type   Flags  Prefixes
       NA           NA      ram     rw  tmp:
       NA           NA   network     rw  tftp:
```

```
      NA          NA   network    rw  oob_tftp:
    8192        2416     disk    rw  flash:

 1048576      548576     disk    rw  usb0:
```

Field	Description
Size(KB)	File system space, in the unit of KB.
Free(KB)	Available file system space, in the unit of KB.
Type	File system type
Flags	Permissions on the file system include: ● ro: read-only ● wo: write-only ● rw: read and write
Prefixes	File system prefix

Related Commands

Command	Description
N/A.	N/A.

Platform Description N/A.

5.15 show mount

Use this command to display the mounted information.

show mount

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode/User configuration mode/Global configuration mode/Interface configuration mode

Usage Guide N/A

Configuration Examples The following example displays the mounted information.

```
Ruijie#show mount
/dev/sda1 on / type ext4 (rw,errors=remount-ro,commit=0)
proc on /proc type proc (rw,noexec,nosuid,nodev)
sysfs on /sys type sysfs (rw,noexec,nosuid,nodev)
fusectl on /sys/fs/fuse/connections type fusectl (rw)
none on /sys/kernel/debug type debugfs (rw)
none on /sys/kernel/security type securityfs (rw)
```

```
udev on /dev type devtmpfs (rw,mode=0755)
devpts on /dev/pts type devpts (rw,noexec,nosuid,gid=5,mode=0620)
tmpfs on /run type tmpfs (rw,noexec,nosuid,size=10%,mode=0755)
none on /run/lock type tmpfs (rw,noexec,nosuid,nodev,size=5242880)
none on /run/shm type tmpfs (rw,nosuid,nodev)
/dev/sda3 on /hao-share type ext3 (rw,commit=0)
binfmt_misc on /proc/sys/fs/binfmt_misc type binfmt_misc
(rw,noexec,nosuid,nodev)
```

Field	Description
proc	Source address of mount.
on	-
/proc	Destination address of mount.
type	-
proc	Mount type.
(rw,noexec,nosuid,nodev)	Mount property.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.16 tftp-client source

Use this command to bind a source IP address or source interface with a TFTP client. Use the **no** or **default** form of this command to restore the default setting.

tftp-client source { **ip** *ip-address* | **ipv6** *ipv6-address* | *interface* }

no tftp-client source { **ip** *ip-address* | **ipv6** *ipv6-address* | *interface*}

default tftp-client source { **ip** *ip-address* | **ipv6** *ipv6-address* | *interface* }

Parameter Description

Parameter	Description
ip-address	Specifies the IPv4 source address.
Ipv6-address	Specifies the IPv6 source address.
interface	Specifies the source interface

Defaults No source interface or IP address is bound with the TFTP client by default.

Command Mode Global configuration mode

Usage Guide N/A

Configuration The following example binds source IP address 192.168.23.236 with the TFTP client.

Examples

```
Ruijie(config)# tftp-client source ip 192.168.23.236
```

The following example binds source IPv6 address 2003:0:0:0::2 with the TFTP client.

```
Ruijie(config)# tftp-client source ipv6 2003:0:0:0::2
```

The following example binds source interface gigabitEthernet 0/0 with the TFTP client.

```
Ruijie(config)# tftp-client source gigabitEthernet 0/0
```

The following example removes the configuration.

```
Ruijie(config)# no tftp-client source ip 192.168.23.236
```

The following example restores the default setting.

```
Ruijie(config)# default tftp-client source ip 192.168.23.236
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.17 tree

Use this command to display the file tree of the current directory.

tree [*filesystem*:] [*directory*]

Parameter Description

Parameter	Description
filesystem:	The URL of file system, followed by a colon (:). The file system includes **flash:**, **usb:**, and **tmp:**.
directory	The path name. A file name starts with “/” is an absolute path. Otherwise, it is a relative path.

Defaults The default *filesystem*: is **flash:**.

Command Mode User configuration mode/Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the file tree of flash:/echo

```
Ruijie#tree flash:/echo
+-- client_module
+-- client_userspace
+-- echo_cli.c
+-- echo_client.c
+-- echo_client.h
+-- echo_client.o
+-- echo_cli.o
+-- echo_flag.h
```

```
+-- echo.h
+-- echo.ko
+-- echo_server.h
+-- exec_set_echo.h
+-- exec_show_echo.h
+-- Makefile
+-- module
¦   +-- echo.ko
¦   +-- echo.mod.c
¦   +-- echo.mod.o
¦   +-- echo_module.c
¦   +-- echo_module.o
¦   +-- echo.o
¦   +-- echo_server.c
¦   +-- echo_server.o
¦   +-- echo_sysfs.c
¦   +-- echo_sysfs.h
¦   +-- echo_sysfs.o
¦   +-- Makefile
¦   +-- modules.order
¦   +-- Module.symvers
¦   +-- msg_fd.c
¦   +-- msg_fd.o
+-- readme
+-- server_module
+-- server_userspace
+-- sys_rgos.ko
+-- user_space
   +-- echo_server.c
   +-- echo_server.o
   +-- Makefile
   +-- msg_fd.c
   +-- msg_fd.o 10,490,132 bytes total (13,192,656 bytes free)
```

Related Commands	**Command**	**Description**
	N/A	N/A

Platform Description N/A

5.18 verify

Use this command to compute, display and verify Message Digest 5 (MD5).

verify [**/md5** *md5-value*] *filesystem***:** [*file-url*]

Parameter Description

Parameter	Description
/md5	Computes and displays MD5.
md5-value	The file MD5, which is compared with the computed MD5.
filesystem:	The URL of file system, followed by a colon (:). The file system includes **flash:**, **usb:**, and **tmp:**.
file-url	The file name containing the path. A file name starts with "/" is an absolute path. Otherwise, it is a relative path.

Defaults The default *filesystem:* is **flash:**.

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example computes MD5 of flash:/gcc.

```
Ruijie#verify flash:/gcc
8b072de7db7affd8b2ef824e7e4d716c
```

The following example computes MD5 of flash:/gcc and makes comparison.

```
Ruijie#verify /md5 8b072de7db7affd8b2ef824e7e4d716c flash:/gcc
%SUCCESS verifying flash:/gcc = 8b072de7db7affd8b2ef824e7e4d716c
Ruijie#verify /md5 8b072de7db7affd8b2ef824e7e4d71 flash:/gcc
%Error verifying flash:/gcc
Computed signature = 8b072de7db7affd8b2ef824e7e4d716c
Submitted signature = 8b072de7db7affd8b2ef824e7e4d71
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.19 show disk

Use this command to display USB/Flash information.

show disk [**usb** | **flash**]

Parameter Description

Parameter	Description
usb	Displays USB information.
flash	Displays FLASH information.

Defaults N/A

Command Mode Privileged EXEC mode/User configuration mode/Global configuration mode/Interface configuration mode

Usage Guide N/A

Configuration Examples The following example displays USB information.

```
Ruijie#show disk usb
Disk /dev/sdb: 8159 MB, 8159477760 bytes
252 heads, 62 sectors/track, 1020 cylinders
Units = cylinders of 15624 * 512 = 7999488 bytes
```

The following example displays FLASH information.

```
Ruijie#show disk flash
Nand flash size: 512MB
Nor flash size: 1MB
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6 SYS Commands

6.1 calendar set

Use this command to set the hardware calendar.

calendar set { *hour* [:*minute* [:*second*]] } [*month* [*day* [*year*]]]

Parameter Description

Parameter	Description
hour [:minute [:second]]	Sets hardware time in the format of hour: minute: second. Only the specified parameters (hour, minute, or second) can be reset. The unspecified parameters keep the current system values.
month	Sets month. The range is from 1 to 12.
day	Sets date. The range is from 1 to 31.
year	Sets year. The range is from 1970 to 2069.

Defaults -

Command Mode Privileged EXEC mode

Default Level -

Usage Guide

1. The time parameter is mandatory. After setting time, set month, day, and year, which can be neglected according to your needs. The parameter that is neglected keeps the current system value. For example, if the current hardware time is "2012-02-29 09:33:44" and you want to change month and hour and keep values of other parameters, use the **calendar set** *12 5* command to change the current time into "2012-05-29 12:33:44".

The hardware time of the system is used as the UTC time, while the software time of the system refers to the local time of the device.

This command is supported only in VSD0 mode. Multiple VSDs are not supported.

Configuration Examples

1: The following example changes the current hardware time of the system (for example, 2012-02-01 18:23:06) into 6 o'clock and keeps the values of other parameters.

```
Ruijie# calendar set 6
06:41:39 UTC Fri, Jul 6, 2012
```

2: The following example changes the current hardware time of the system (for example, 2012-02-01 18:23:06) into 06:42 and keeps the values of other parameters.

```
Ruijie# calendar set 6:42
06:42:27 UTC Fri, Jul 6, 2012
```

3: The following example changes the current hardware time of the system (for example, 2012-02-01 18:23:06) into March 2 and keeps the values of other parameters.

```
Ruijie# calendar set 18 3 2
18:43:05 UTC Fri, Mar 2, 2012
```

⚠ Because the *hour* parameter is mandatory, set it to the current time if you do not need to change its value. As shown in the last example, enter **18** (hour), and then enter **3** (month) and **2** (day).

Check Method -

Platform Description -

6.2 clock read-calendar

Use this command to enable the system to synchronize the software time with the hardware time.

clock read-calendar

Parameter Description

Parameter	Description
-	-

Defaults -

Command Mode Privileged EXEC mode

Default Level -

Usage Guide This command is supported only in VSD0 mode. Multiple VSDs are not supported.
After you configure this command, the system will synchronize the software time with the current hardware time according to the time zone and summer time settings of the device.

Configuration 1: The following example enables the system to synchronize the software time with the hardware time.

Examples

```
Ruijie# clock read-calendar
Set the system clock from the hardware time.
```

Check Method -

Platform Description -

6.3 clock set

Use this command to set the system software clock.

clock set { *hour* [:*minute* [:*second*]] } [*month* [*day* [*year*]]]

Parameter Description

Parameter	Description
hour [:minute [:second]]	Sets software time in the format of hour: minute: second. Only the specified parameters (hour, minute, or second) can reset. The unspecified parameters keep the current system values.
month	Sets month. The range is from 1 to 12.
day	Sets date. The range is from 1 to 31.
year	Sets year. The range is from 1970 to 2069.

Defaults -

Command Mode Privileged EXEC mode

Default Level -

Usage Guide

1. The time parameter is mandatory. After setting time, set month, day, and year, which can be neglected according to your needs. The parameter that is neglected keeps the current system value.

For example, if the current hardware time is "2012-02-29 09:33:44" and you want to change month and hour and keep values of other parameters, use the **clock set** *12 5* command to change the current time into "2012-05-29 12:33:44".

This command is supported only in VSD0 mode. Multiple VSDs are not supported.

Configuration Examples

1: The following example changes the current software time of the system (for example, 2012-02-01 18:23:06) into 6 o'clock and keeps the values of other parameters.

```
Ruijie# clock set 6
06:48:13 CST Fri, Mar 2, 2012
```

2: The following example changes the current software time of the system (for example, 2012-02-01

18:23:06) into 06:42 and keeps the values of other parameters.

```
Ruijie# clock set 6:42
06:42:31 CST Fri, Mar 2, 2012
```

3: The following example changes the current software time of the system (for example, 2012-02-01 18:23:06) into March 2 and keeps the values of other parameters.

```
Ruijie# clock set 18 3 2
18:42:48 CST Fri, Mar 2, 2012
```

Because the *hour* parameter in this command is mandatory, set it to the current time if you do not need to change its value. As shown in the last example, enter **18** (hour), and then enter **3** (month) and **2** (day).

Check Method -

Platform Description -

6.4 clock summer-time

Use this command to set the summer time.

clock summer-time *zone* **start** *start-month* [*week*|**last**] *start-date hh:mm* **end** *end-month* [*week*| **last**] *end-date hh:mm* [**ahead** *hours-offset* [*minutes-offset*]

Use this command to disable the summer time.

no clock summer-time

Parameter Description

Parameter	Description
zone	Summer time name. It can only be a letter between A and Z or between a and z, which is not case sensitive. The summer time name contains 3 to 31 characters.
start	Indicates the start time of the summer time.
start-month	Start month. Value range: January, February, March, April, May, June, July, August, September, October, November, and December. The value is not case sensitive and you are allowed to enter an incomplete word, for example, Febr and FebRu.
week	Start week in the start month. The range is from 1 to 5.
last	The last week of the specified month.
start-date	Day in the start week of the start month. Value range: Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, and Saturday. The value is not case sensitive and you are allowed to enter an incomplete word, for example, Web and WeDne.
hh:mm	Time, in the format of hour : minute.
end	Indicates the end time of the summer time.
end-month	End month. Value range: January, February, March, April, May, June, July, August, September, October, November, and December. The value is not case sensitive and you may enter an incomplete word, for example, Febr and FebRu.
ahead	Indicates how much time for the summer time ahead of the standard time during the effective period of the summer time. By default, the summer time is one hour ahead of the standard time.
hours-offset	Hours ahead of the standard time. The range is from 0 to 12. You are not allowed to set it to 00:00.
minutes-offset	Minutes ahead of the standard time. The range is from 0 to 59. If *hours-offset* has been set to 0, you are not allowed to set *minutes-offset* to 0.

Defaults -

Command Mode Global configuration mode

Default Level -

Usage Guide This command is supported only in VSD0 mode. Multiple VSDs are not supported.

Configuration Examples 1: Assume that the time zone name of your living place is ABC and the standard time is 8:15 ahead of UTC, namely, GMT+08:15. The summer time period starts from the first Saturday in February to the third Monday in May and the summer time is 01:20 ahead of the standard time. In this case, the summer time is

09:35 ahead of the UTC time, but non-summer time is still 08:15 ahead of the UTC time.

```
Ruijie(config)# clock timezone ABC 8 15
Set time zone name: ABC (GMT+08:15)
Ruijie(config)#show clock
16:39:16 ABC Wed, Feb 29, 2012
Ruijie(config)#show calendar
08:24:35 GMT Wed, Feb 29, 2012

Ruijie(config)# clock summer-time TZA start Feb 1 sat 2:00 end May 3 Monday 18:30 ahead 1 20
*May 10 03:45:58: %SYS-5-CLOCKUPDATE: Set summer-time: TZA from February the 1st Saturday at 2:00
TO May the 3rd Monday at 18:30, ahead 1 hour 20 minute
Set summer-time: TZA from February the 1st Saturday at 2:00 TO May the 3rd Monday at 18:30, ahead
1 hour 20 minute

Ruijie# show clock
18:00:08 TZA Wed, Feb 29, 2012

# If the time is set to non-summer time, the time zone name is restored to ABC.
Ruijie#clo set 18 1 1
*Jan  1 18:00:09: %SYS-5-CLOCKUPDATE: Set system clock: 18:00:09 ABC Sun, Jan  1, 2012
Set system clock: 18:00:09 ABC Sun, Jan  1, 2012
Ruijie#show clock
18:00:12 ABC Sun, Jan  1, 2012
```

2: If the system uses the default summer time that is one hour ahead of the standard time, ahead and the parameters behind ahead can be neglected. For example, set the summer time to start from 2:00 a.m. of the first Sunday in April to 2:00 a.m. of the last Sunday in October and set the summer time to one hour ahead of the standard time.

```
Ruijie(config)#clo summer-time PDT start April 1 sunday 2:00 end October last Sunday 2:00
*May 10 03:15:05: %SYS-5-CLOCKUPDATE: Set summer-time: PDT from April the 1st Sunday at 2:00 TO
October the last Sunday at 2:00, ahead 1 hour
Set summer-time: PDT from April the 1st Sunday at 2:00 TO October the last Sunday at 2:00, ahead
1 hour
```

3: Disable summer time.

```
Ruijie(config)#no clock summer-time
*Jan  1 18:01:09: %SYS-5-CLOCKUPDATE: Set no summer time.
Set no summer time.
```

Check Method -

Platform Description -

6.5 clock timezone

Use this command to set the time zone.

clock timezone [*name hours-offset* [*minutes-offset*]]

Use this command to remove the time zone settings.

no clock timezone

Parameter Description

Parameter	Description
name	Time zone name. It can only be a letter between A and Z or between a and z, which is not case sensitive. The name contains 3 to 31 characters.
hours-offset	Hours of time difference. It indicates whether the time is faster or smaller than the hardware UTC time. The range is from -12 to 12. The negative digit indicates that the time is slower than the hardware time, while the positive digit indicates that the time is faster than the hardware time. If the time is slower than the UTC time, add "-" before *hours-offset*.
minutes-offset	Minutes of time difference. The range is from 0 to 59.

Defaults

-

Command Mode

Global configuration mode

Default Level

-

Usage Guide

This command is supported only in VSD0 mode. Multiple VSDs are not supported.

Configuration Examples

1: The following example sets the time zone name to CST. The software time is 8 hours faster than the hardware time.

```
Ruijie(config)# clock timezone CST 8
Set time zone name: CST (GMT+08:00)

Ruijie# show clock
18:00:17 CST Wed, Dec 5, 2012
```

2: The following example sets the time zone name TZA. The software time is 06:13 slower than the hardware time.

```
Ruijie(config)# clock timezone TZA -6 13
Set time zone name: TZA (GMT-06:13)
```

3. The following example removes the time zone settings.

```
Ruijie(config)# no clock timezone
```

```
Set no clock timezone.
```

Check Method -

Platform Description -

6.6 clock update-calendar

Use this command to enable the system to synchronize the hardware time with the software time.
clock update-calendar

Parameter Description

Parameter	Description
-	-

Defaults -

Command Mode Privileged EXEC mode

Default Level -

Usage Guide This command is supported only in VSD0 mode. Multiple VSDs are not supported.
After you configure this command, the system will synchronize the hardware time with the current software time according to the time zone and summer time settings of the device.

Configuration Examples 1: The following example enables the system to synchronize the hardware time with the software time.

```
Ruijie# clock update-calendar
Set the hardware time from the system clock.
```

2: The following example sets the time zone of the hardware time to GMT+5:10, which indicates that the hardware time is 5:10 slower than the software time. The summer time is not set.

```
Ruijie# show clock
09:30:21 TSZ Wed, Feb 29, 2012

Ruijie# clock update-calendar
Set the hardware time from the system clock.

Ruijie#show calendar
04:20:25 UTC Wed, Feb 29, 2012
```

3: The following example sets the hardware time. If it is set to GMT+5:10 and the summer time is set to be

1:15 faster from the first Monday in February 1 to the second Sunday in June 1, it indicates that the hardware time is 6:25 slower than the software time during the effective period of the summer time.

```
Ruijie# show clock
09:30:02 TSZ Wed, Feb 29, 2012

Ruijie# clock update-calendar
Set the hardware time from the system clock.

Ruijie#show calendar
03:05:08 UTC Wed, Feb 29, 2012
```

Check Method -

Platform Description -

6.7 cpu high-watermark set

Use this command to set the upper threshold and lower threshold of the CPU usage.
cpu high-watermark set [[**up** *up-value*] [**down** *down-value*]]

Use this command to disable CPU usage monitoring.
no cpu high-watermark set

Use this command to restore the default settings.
default cpu high-watermark set

Parameter Description

Parameter	Description
up *up-value*	Sets the upper threshold. The range is from 1 to 99.
down *down-value*	Sets the lower threshold. The range is from 1 to 99.

Defaults By default, the CPU usage threshold is 85% and the range is 75%.

Command Mode Global configuration mode

Default Level -

Usage Guide This command is supported only in VSD0 mode. Multiple VSDs are not supported.
You can use this command to set the high watermark of the CPU usage and enable CPU usage monitoring. When detecting that the CPU usage exceeds the fluctuation range of the highest watermark, the system prints prompts.

Configuration Examples 1: The following example sets the CPU usage threshold to the default value and enables CPU usage monitoring (if it is disabled).

```
Ruijie(config)# default cpu high-watermark set
Reset default cpu watermark monitor
```

Set system cpu high-watermark up 85%, down 75%

2: The following example disables CPU usage monitoring.

```
Ruijie(config)# no cpu high-watermark set
Close cpu watermark monitor
```

3: The following example enables CPU usage monitoring.

```
Ruijie(config)# cpu high-watermark set
set system cpu watermark high 80%(75%~85%)
Set system cpu high-watermark up 85%, down 75%
```

4: The following example sets the higher threshold to 90% and the lower threshold to 70%.

```
Ruijie(config)#cpu high-watermark set up 90 down 70
Open cpu watermark monitor
Set system cpu high-watermark up 90%, down 70%
```

In this case, the high watermark and the low watermark are set to 90% and 70% respectively.

Check Method -

Prompt Message If the high watermark of the CPU usage is allowed to fluctuate from 85% to 91%, the system will print the following warning message when the CPU usage exceeds the upper limit of the high watermark:

```
*Jan 19 16:23:01: %RG_SYSMON-4-CPU_WATERMARK_HIGH: warning! system cpu usage above high watermark(91%),current cpu usage 100%
```

When the CPU usage is less than the lower limit of the high watermark, the system will print the following

message about warning release:

```
*Jan 20 07:02:52:  %RG_SYSMON-5- CPU_WATERMARK:withdraw warning! system cpu usage below high watermark(85%), current cpu usage 36%
```

Platform Description -

6.8 memory low-watermark set

Use this command to set the memory usage threshold..

memory low-watermark set *mem-rate*

Use the **no** or **default** form of this command to disable the detection of memory low watermark.

no memory low-watermark set

default memory low-watermark set

Parameter Description

Parameter	Description
mem-rate	Memory usage threshold. The range is from 1% to 100%.

Defaults The default memory usage threshold is 90%.

Command Mode Global configuration mode

Default Level -

Usage Guide N/A

Configuration Examples 1: The following example sets the memory usage threshold to 80%.

```
Ruijie(config)#memory low-watermark set 80
```

Check Method -

Prompt Message

```
N/A
```

Platform Description -

6.9 memory history clear

Use this command to clear the history of the memory usage.

memory history clear [**one-forth | half | all**]

Parameter Description

Parameter	Description
one-forth	Clears one fourth entries.
half	Clears a half of entries.
all	Clears all the entries.

Defaults -

Command Mode Global configuration mode

Default Level -

Usage Guide -

Configuration Examples 1: The following example clears a half of the history of the memory usage.

```
Ruijie# show memory history

Time Thu Jan  1 00:24:45 1970
Used(k) 148516
Maxinum memory users for this period
Process Name    Holding
tcpip.elf       270028
cli-memory      60600
rg_syslogd      36640

Time Thu Jan  1 00:24:41 1970
Used(k) 148492
Maxinum memory users for this period
Process Name    Holding
tcpip.elf       270028
cli-memory      52408
rg_syslogd      36640

Time Thu Jan  1 00:24:41 1970
Used(k) 148444
Maxinum memory users for this period
Process Name    Holding
tcpip.elf       270028
cli-memory      44088
rg_syslogd      36640
```

```
Ruijie(config)#memory history clear half
2 out of 5 records in the history table to be cleared...
Clear done !
```

Check Method -

Prompt Message -

Platform Description -

6.10 reload

Use this command to reload the device.

reload [**at** { *hour* [:*minute* [:*second*]] } [*month* [*day* [*year*]]]]

Parameter Description

Parameter	Description
hour [:*minute* [:*second*]]	Sets the restart time in the format of hour : minute : second. Other neglected parameters keep the current system values.
month	Sets the month in the range from 1 to 12.
day	Sets the day in the range from 1 to 31.
year	Sets the year in the range from 1970 to 2069.

Defaults -

Command Mode Privileged EXEC mode

Default Level -

Usage Guide -

Configuration Examples The following example reloads the device.

```
Ruijie# reload
Reload system?(Y/N) Y
Sending all processes the TERM signal...                    [  OK  ]
Sending all processes the KILL signal...                    [  OK  ]
Restarting system...
```

Check Method -

Prompt Message -

Platform Description -

6.11 show calendar

Use this command to display the hardware calendar.

show calendar

Parameter Description

Parameter	Description
-	-

Command Mode Privileged EXEC mode/ global configuration mode

Default Level -

Usage Guide -

Configuration Examples The following example displays the hardware calendar.

```
Ruijie# show calendar
21:57:48 GMT Sun, Feb 28, 2012
```

Prompt Message -

Platform Description -

6.12 show clock

Use this command to display the system software clock.

show clock

Parameter Description

Parameter	Description
-	-

Command Mode Privileged EXEC mode / global configuration mode

Default Level -

Usage Guide -

Configuration Examples

1. The following example displays the software clock when the time zone is disabled.

```
Ruijie# show clock
18:22:20 UTC Tue, Dec 11, 2012
```

2. The following example displays the software clock when the time zone is enabled.

```
Ruijie# show clock
03:07:49 TSZ Wed, Feb 29, 2012
```

Prompt Message -

Platform Description -

6.13 show memory

Use this command to display the system memory.

show memory [**sorted total | history | low-watermark |** *process-id* **|** *process-name*]

Parameter Description

Parameter	Description
sorted total	Ranked according to the memory usage.
history	Displays the history of memory usage.
low-watermark	Displays the memory low watermark threshold of the system.
process-id	Displays the memory usage of the task specified by *process-id*.
process-name	Displays the memory usage of the task specified by *process-name*.

Command Mode Privileged EXEC mode/ global configuration mode

Default Level -

Usage Guide Every time when the **show memory history** command is used, the number of displayed entries increases by one. Up to 10 entries can be displayed. You can use the **memory history clear** command to clear history entries.

Configuration Examples 1: The following example displays the memory usage of each task and the ranking (based on the total memory usage).

```
Ruijie# show memory sorted
System Memory: 508324K total, 481560K used, 26764K free, 31.5% used rate
```

```
Used detail:   149112K active, 247776K inactive, 30460K mapped, 50460K slab, 3752K others

PID      Text(K)  Rss(K)   Data(K)          Stack(K) Total(K)         Process
807      1568     4584     264728           84       270028           tcpip.elf
854      40       1436     246076           84       248840           cli-filesystem
1237     52       1492     123260           84       126036           cli-memory
803      56       1104     74064            84       76920            ping.elf
727      84       1276     33812            84       36640            rg_syslogd
733      84       796      33536            84       36364            rg_syslogd
776      224      1416     16896            84       19800            lsmdemo
858      40       1324     16844            84       19612            rg-tty-admin
769      40       3600     11052            84       13812            skbdemo
--More--
```

Description of some keywords in the command:

Keyword	Description
total	Total system memory
used	Used memory
free	Remaining memory
used rate	Memory usage (percentage)
Active	Active page
inactive	Inactive page
mapped	Mapped memory
slab	Memory consumed by Slab
others	Memory capacity of the used memory except the memory used by active and inactive pages, mapped memory, and slab memory.

Description of the displayed information on each task:

Field	Description
PID	Process ID
Text	Code segment size
Rss	Resident memory size
Data	Data segment size
Stack	Stack size
Total	Total used memory
Process	Task name

Prompt Message

-

Platform Description

-

6.14 show memory vsd

Use this command to display memory information.

show memory vsd *vsd_id*

Parameter Description

Parameter	Description
vsd_id	VSD ID is a digit. You can use the **show vsd** command to display the ID of each VSD. The ID range is from 0 to 16.

Command Mode Privileged EXEC mode/ global configuration mode

Default Level -

Usage Guide

This command is supported only in VSD0 mode.

Configuration Examples

The following example displays the memory usage of each task in VSD 1 mode.

```
Ruijie#show memory vsd 1
PID      Text     Rss      Data     Stack    Total    Process
1408     244      1192     25400    84       32164    tty_secu_enable
1385     104      16288    648      84       18648    gvpd
1384     304      3872     17084    84       24728    wbamain
1382     376      17708    33656    84       53308    snooping.elf
1381     84       2156     16736    84       22956    password_policy
1380     72       1096     404      84       3848     dns_client.elf
1379     168      2580     472      84       5352     rg-rmond
1378     652      3504     9768     84       15964    rg-snmpd
1376     208      1452     10672    84       14872    rg-fsui
1375     116      2020     33464    84       37288    rg-telnetc
1373     24       844      220      84       2824     rg-telnetd
1372     724      2364     17016    84       24380    rg-sshd
1371     244      2996     35780    84       42544    rg-tty-admin
1365     132      2168     9004     84       13796    vrrp_plus.elf
1364     312      16944    764      84       20368    vrrp.elf
1363     124      16988    500      84       19744    lacp.elf
1358     24       1380     320      84       3536     ftpc_cli.elf
1357     124      1944     8552     84       14976    ftp_server.elf
1352     340      3032     74704    84       80768    dhcp6.elf
1351     312      1960     988      84       6116     dhcp.elf
1350     388      17808    920      84       21600    mstp.elf
1349     240      3876     976      84       9536     rpi.elf
1348     1316     4656     1004     84       10764    isis.elf
1347     212      4220     872      84       9368     ripng.elf
```

```
1345    460     4284    876     84      9656    rip.elf
1344    1800    5568    1572    84      12156   bgp.elf
1340    1084    4700    1024    84      10928   ldp.elf
1339    288     17684   556     84      21472   msf.elf
1338    208     3604    42712   84      47708   rg-syslogd
--More--
```

Prompt Message -

Platform Description -

6.15 show pci-bus

Use this command to display the information on the device mounted to the PCI bus.

show pci-bus

Parameter Description

Parameter	Description
-	-

Command Mode Privileged EXEC mode/ global configuration mode

Default Level -

Usage Guide -

Configuration Examples 1: The following example displays the information on the device mounted to the PCI bus.

```
Ruijie# show pci-bus
NO:0
Vendor ID             : 0x1131
Device ID             : 0x1561
Domain:bus:dev.func   : 0000:00:05.0
Status / Command      : 0x2100000
Class / Revision      : 0xc031030
Latency               : 0x0
first 64 bytes of configuration address space:
00: 31 11 61 15 00 00 10 02 30 10 03 0c 20 00 80 00
10: 00 00 00 f0 00 00 00 00 00 00 00 00 00 00 00 00
20: 00 00 00 00 00 00 00 00 00 00 00 00 31 11 61 15
30: 00 00 00 00 dc 00 00 00 00 00 00 00 29 01 01 2a

NO:1
Vendor ID             : 0x1131
Device ID             : 0x1562
Domain:bus:dev.func   : 0000:00:05.1
Status / Command      : 0x2100156
Class / Revision      : 0xc032030
Latency               : 0x30
```

```
First 64 bytes of configuration address space:
00: 31 11 62 15 56 01 10 02 30 20 03 0c 20 30 80 00
10: 00 10 00 f0 00 00 00 00 00 00 00 00 00 00 00 00
20: 00 00 00 00 00 00 00 00 00 00 00 00 31 11 62 15
30: 00 00 00 00 dc 00 00 00 00 00 00 00 29 01 02 10
```

Prompt Message -

Platform Description -

6.16 show processes cpu

Use this command to display system task information.

show processes cpu [**history** [**table**] | [**5sec | 1min | 5min | 15min**] [**nonzero**]]

Parameter Description

Parameter	Description
5sec | 1min | 5min | 15min	Displays lists of tasks in descending order of CPU usage within the last five seconds, one minute, five minutes, and 15 minutes.
Nonzero	Does not display the task with 0 CPU usage.
History	Displays the CPU usage of the control core within the last 60 seconds, 60 minutes, and 72 hours in histogram.
Table	Displays the CPU usage of the control core within the last 60 seconds, 60 minutes, and 72 hours in table.

Command Mode Privileged EXEC mode/ global configuration mode

Default Level -

Usage Guide This command is supported only in VSD0 mode. Multiple VSDs are not supported.

Configuration Examples 1: The following example displays the tasks listed in ascending order of task IDs.

```
Ruijie# show processes cpu
System Uptime: 19:08.6
CPU utilization for five seconds:1.2%; one minute:0.8%; five minutes:0.8%
set system cpu watermark (open): high 80%(85%~75%)

Tasks Statistics: 375 total, 10 running, 365 sleeping, 0 stopped, 0 zombie
  Pid Vsd S   PRI  P       5Sec       1Min       5Min      15Min Process
    1   0 S    20  0   0.0(0.0)   0.0(0.0)   0.0(0.0)   0.0(0.0) init
    2   0 S    20  1   0.0(0.0)   0.0(0.0)   0.0(0.0)   0.0(0.0) kthreadd
```

```
   3   0 S  -100   0    0.0(0.0)    0.0(0.0)    0.0(0.0)    0.0(0.0) migration/0
   4   0 S    20   0    0.0(0.0)    0.0(0.0)    0.0(0.0)    0.0(0.0) ksoftirqd/0
   5   0 S  -100   1    0.0(0.0)    0.0(0.0)    0.0(0.0)    0.0(0.0) migration/1

--More--
```

2: The following example displays the tasks listed in ascending order of task IDs without displaying the tasks with 0 CPU usage within 15 minutes.

```
Ruijie# show processes cpu nonzero
```

Description of the information displayed in this command:

Field	Description
System Uptime	Total running time of the device, precious to seconds.
CPU Utilization	Total CPU usage of the control core within the last five seconds, one minute, and five minutes.
Virtual CPU usage	Total CPU usage of the virtual control core within the last five seconds, one minute, and five minutes.
Tasks Statistics	Task statistics information, including the total number of statistics tasks and the task status.
set system cpu watermark	CPU watermark value and status of the control core.

The task running statuses are listed below:

Task Running Status	Description
running	Running task
sleeping	Suspended task
stopped	Stopped task
zombie	Terminated task, but not reclaimed by the system

Description of each task:

Field	Description
Pid	Task ID
Vsd	VSD ID
S	Task status. Five statuses in total: R (running), T (stopped), S (sleeping), D (waiting), and Z (zombie).
PRI	Task running priority
P	The core of the CPU on which the task runs
5sec/1min/5min/15min	CPU usage of the task within the last five seconds, one minute, five minutes, and 15 minutes. The value in the round brackets is the CPU usage that is not divided by the total number of cores where the task runs.

Process	Task name. Only the first 15 characters are displayed. The remaining characters are truncated.

3: The following example displays the CPU usage in ascending order of task IDs and only the processes with non-zero CPU usage within 15 minutes are displayed.

```
Ruijie #show processes cpu nonzero
```

4: The following example displays the CPU usage in descending order within five seconds and the tasks with zero CPU usage within one second are not displayed.

```
Ruijie #show processes cpu 5sec nonzero
```

5: The following example displays the CPU usage of the control core in histograms within the last 60 seconds, 60 minutes, and 72 hours.

The first histogram displays the CPU usage of the control core within 300 seconds. Every segment in the x-coordinate is five seconds, and every segment in the y-coordinate is 5%. The symbol "*" indicates the CPU usage at the last specified second. In other words, the first segment on the x-coordinate nearest to 0 is the CPU usage in the last five seconds, measured in %.

The second histogram displays the CPU usage of the control core within the last 60 minutes, measured in %. Every segment on the x-coordinate is 1 minute.

The third histogram displays the CPU usage of the control core within the last 72 hours, measured in %. Every segment on the x-coordinate is 1 hour.

Example:

```
Ruijie#show processes cpu history

            system cpu percent usage(%) [last 300 second]
   -
 100|
  95|
  90|
  85|
  80|
  75|
  70|
  65|
  60|
  55|
  50|
  45|
  40|*********
  35|||||||||
  30|||||||||*
  25||||||||||
  20||||||||||
  15||||||||||
```

```
  10|||||||||||
   5|||||||||||**************
   0|||||||||||||||||||||||||
    #========#========#=====*==>
    0         50        100       second
        system cpu percent usage(%) per 5second (last 125 second)
------------------------------------------------------------------------------



            system cpu percent usage(%) [last 60 minute]

    -
 100|
  95|
  90|
  85|
  80|
  75|
  70|
  65|
  60|
  55|
  50|
  45|
  40|
  35|
  30|*
  25||
  20||
  15||
  10||
   5||*
   0|||
    #==*==>
    0     minute
        system cpu percent usage(%) per 1minute (last 2 minute)
------------------------------------------------------------------------------
```

6: The following example displays the CPU usage of the core 0 in tables within the last 60 seconds, 60 minutes, and 72 hours.

The first table lists the CPU usage within 300 seconds. The first cell indicates the CPU usage within the last five seconds.

The second table lists the CPU usage within the last 60 minutes, measured in %. The two adjacent cells show the CPU usage measured at an interval of one minute.

The third table lists the CPU usage within the last 72 hours, measured in %. The two adjacent cells show the CPU usage measured at an interval of one hour.

Example:

```
Ruijie #show processes cpu history table
              system cpu percent usage(%) [last 300 second]
#-------------------------------------------------------------------------------#
|         |     1|     2|     3|     4|     5|     6|     7|     8|     9|    10|
#-------------------------------------------------------------------------------#
#-------------------------------------------------------------------------------#
|       0|   2.0|   2.4|   2.3|   2.3|   2.8|   3.0|   2.7|   3.2|   2.6|   2.4|
#-------------------------------------------------------------------------------#
|       1|   2.7|   2.5|   2.7|   2.2|   2.4|   2.6|   2.2|   2.7|   2.3|   2.5|
#-------------------------------------------------------------------------------#
|       2|   2.9|   2.0|   2.4|   2.5|   2.7|   2.4|   2.4|   2.6|   2.6|   2.5|
#-------------------------------------------------------------------------------#
|       3|   2.7|   2.8|   2.8|   3.2|   2.5|   3.2|   3.1|   4.0|   2.7|   2.7|
#-------------------------------------------------------------------------------#
|       4|   4.0|   2.3|   2.1|   2.2|   2.7|   2.4|   2.5|   2.6|   2.4|   2.6|
#-------------------------------------------------------------------------------#
|       5|   2.4|   3.2|   2.5|   2.3|   2.3|   3.6|   2.8|   2.5|   2.2|   2.4|
#-------------------------------------------------------------------------------#

              system cpu percent usage(%) [last 60 minute]
#-------------------------------------------------------------------------------#
|         |     1|     2|     3|     4|     5|     6|     7|     8|     9|    10|
#-------------------------------------------------------------------------------#
#-------------------------------------------------------------------------------#
|       0|   2.6|   2.5|   3.0|   2.4|   2.6|
#-------------------------------------------------------------------------------#
```

Prompt Message -

Platform Description -

6.17 show processes cpu detailed

Use this command to display the details of the specified task.

show processes cpu detailed { *process-id* | process-*name* }

Parameter Description

Parameter	Description
process-id	Displays the information on the task of the specified task ID.
process-name	Displays the information on the task of the specified task name.

Command Mode Privileged EXEC mode/ global configuration mode

Default Level -

Usage Guide This command is supported only in VSD0 mode. Multiple VSDs are not supported.

Configuration Examples 1: The following example displays the information on the task of the specified task name.

```
Ruijie# show processes cpu detailed demo
Process Id    : 1820
Process Name  : demo
Vsdid         : 0
Process Ppid  : 1

State         : R(running)
On CPU        : 0
Priority      : 20
Age Time      : 24:06.5
Run Time      : 00:01.0
Cpu Usage     :
    Lass  5 sec    0.3% (0.6%)
    Lass  1 min    0.3% (0.6%)
    Lass  5 min    0.3% (0.6%)
    Lass 15 min    0.3% (0.6%)
Tty           : ?
```

Code Usage: 209.6 KB. If the specified task name is not unique, the system displays the following

message:

```
Ruijie# show processes cpu detailed demo
duplicate process, choose one by id not name.
name: demo, id: 1089, state: S(sleeping)
name: demo, id: 1091, state: R(running)
process name: monitor_procps, do NOT exist, or NOT only one.
```

Description of the displayed information:

Field	Description
Process Id	Task ID
Vsdid	VSD ID of the task
Process Name	Task name
Process Ppid	Parent process task ID
State	Task running status
On CPU	CPU where the task is running
Priority	Task priority
Age Time	Duration for the task from self-startup to now
Run Time	Duration for the task from self-startup to being executed
Cpu Usage	CPU usage of the task within the last five seconds, one minute, five minutes, and 15 minutes. The value in the round brackets is the CPU usage that is not divided by the total number of cores where the task runs. For example, the demo task is running on No.0 core, which is the control core and the system has two control cores. In this case, the CPU usage is 0.3% (0.6%).
Tty	Tty ID, in the format of "Primary device ID, secondary device ID". If it is 0, the value is **?**.
Code Usage	Size occupied by the task code segment

2: The following example displays the information on the task of the specified task ID.

```
Ruijie# show process cpu detailed 1715
```

```
Process Id    : 130
Process Name  : crypto
Vsdid         : 0
Process Ppid  : 2

State         : S(sleeping)
On CPU        : 0
Priority      : 0
Age Time      : 03:41:09.9
Run Time      : 00:00.0
Cpu Usage     :
    Last  5 sec    0.0%(  0.0%)
    Last  1 min    0.0%(  0.0%)
```

```
    Last  5 min    0.0%(  0.0%)
    Last 15 min    0.0%(  0.0%)
Tty           : ?
Code Usage    : 0.0KB.
```

Prompt Message -

Platform Description -

6.18 show usb-bus

Use this command to display the information on the device mounted to the USB bus.

show usb-bus

Parameter Description

Parameter	Description
-	-

Command Mode Privileged EXEC mode/ global configuration mode

Default Level -

Usage Guide -

Configuration Examples 1: The following example displays the information on the device mounted to the USB bus.

```
Ruijie# show usb-bus
Device: Linux Foundation 2.0 root hub
  Bus 001 Device 001: ID 1d6b:0002
```

Prompt Message -

Platform Description -

6.19 show version

Use this command to display the system version information.

show version

Parameter

Parameter	Description

Description		
	-	-

Command Mode Privileged EXEC mode/ global configuration mode

Default Level -

Usage Guide -

Usage Guide The following example displays the system version information.

```
Ruijie# show version
System description      : Ruijie Indoor AP320-I (802.11a/n and 802.11b/g/n) By Ruijie Networks
System start time       : 2012-12-06 00:00:00
System uptime           : 0:03:20:07
System hardware version : 1.0.0
System software version : AP_RGOS11.0(1B1)
System serial number    : 1234942570018
System boot version     : 1.0.0
```

Prompt Message -

Platform Description -

6.20 show cpu

Use this command to display the information on the system task running on the control core instead of the non-virtual core.

show cpu [**core**]

Parameter Description

Parameter	Description
core	Displays CPU usage of each core on all modules.

Command Mode Privileged EXEC mode/ global configuration mode

Default Level -

Usage Guide This command is supported only in VSD0 mode. Multiple VSDs are not supported.
If the system is equipped with a virtual core, you can use the **show processes cpu** command to check the CPU usage of the virtual core.

Configuration Examples

The following example displays the information on the system task running on the control core instead of the non-virtual core.

```
Ruijie#show cpu
================================================
CPU Using Rate Information
CPU utilization in five seconds:  4.80%
CPU utilization in one minute:  4.10%
CPU utilization in five minutes:  4.00%

 NO      5Sec    1Min    5Min Process
    1   0.00%   0.00%   0.00% init
    2   0.00%   0.00%   0.00% kthreadd
    3   0.00%   0.00%   0.00% ksoftirqd/0
    4   0.00%   0.00%   0.00% events/0
--More—
```

The following example displays CPU usage of each core on all modules.

```
Ruijie#show cpu core
================================================
[Slot 2: M18000-16XS-CB, Cpu 0]
Core   5Sec   1Min   5Min
   0  11.9%  11.7%  23.4%
   1   0.0%   0.0%   0.0%
================================================
[Slot 3: M18000-16XS-CB, Cpu 0]
Core   5Sec   1Min   5Min
   0  11.2%  11.4%  23.7%
   1   0.0%   0.0%   0.0%
================================================
[Slot M1: M7800E-CM]
Core   5Sec   1Min   5Min
   0  15.9%  21.0%  29.7%
   1   1.5%   1.5%   1.4%
```

Prompt Message

-

Platform Description

-

6.21 show reboot-reason

Use this command to display the reboot reason.

show reboot-reason [*all*]

Parameter Description

Parameter	Description
all	Displays the reboot reason of all devices/service modules

Command Mode Privileged EXEC mode/ global configuration mode/ User EXEC mode

Default Level -

Usage Guide -

Configuration Examples The following example displays the reboot reason of the device.

```
Ruijie#show reboot-reason
time: 1970-01-01 08:03:13
reason: reload cmd
info: /sbin/rg-sysmon/3844

Ruijie#
```

Prompt Message -

Platform Description -

7 Time Range Commands

7.1 absolute

Use this command to configure an absolute time range.
absolute { [**start** *time date*] [**end** *time date*] }

Use the **no** form of this command to remove the absolute time range.
no absolute

Parameter Description

Parameter	Description
start *time date*	Indicates the start time of the range.
end *time date*	Indicates the end time of the range.

Defaults The default absolute time range is the maximum range.

Command Mode Time range configuration mode

Default Level 14

Usage Guide Use the **absolute** command to configure a time absolute time range between a start time and an end time to allow a certain function to take effect within the absolute time range.
The maximum absolute time range is from 00:00 January 1, 0 to 23:59 December 31, 9999.

Configuration Examples The following example creates a time range and enters time range configuration mode.

```
Ruijie(config)# time-range no-http
Ruijie(config-time-range)#
```

The following example configures an absolute time range.

```
Ruijie(config-time-range)# absolute start 1:1 1 JAN 2013 end 1:1 1 JAN 2014
```

Check Method Use the **show time-range** [*time-range-name*] command to display the time range configuration.

Prompt Message -

Platform Description -

7.2 periodic

Use this command to configure periodic time.
periodic *day-of-the-week time* **to** [*day-of-the-week*] *time*

Use the **no** form of this command to remove the configured periodic time.
no periodic *day-of-the-week time* **to** [*day-of-the-week*] *time*

Parameter Description

Parameter	Description
day-of-the-week	Indicates the week day when the periodic time starts or ends.
time	Indicates the exact time when the periodic time starts or ends.

Defaults No periodic time is configured by default.

Command Mode Time range configuration mode

Default Level 14

Usage Guide Use the **periodic** command to configure a periodic time interval to allow a certain function to take effect within the periodic time. If you want to modify the periodic time, it is recommended to disassociate the time range first and associate the time range after the periodic time is modified.

Configuration Examples The following example creates a time range and enters time range configuration mode.

```
Ruijie(config)# time-range no-http
Ruijie(config-time-range)#
```

The following example configures a periodic time interval.

```
Ruijie(config-time-range)# periodic Monday 1:1 to Tuesday 2:2
```

Check Method Use the **show time-range** [*time-range-name*] command to display the time range configuration.

Prompt Message -

Platform Description -

7.3 show time-range

Use this command to display the time range configuration.

show time-range [*time-range-name*]

Parameter Description

Parameter	Description
time-range-name	Displays a specified time range.

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide Use this command to check the time range configuration.

Configuration Examples The following example displays the time range configuration.

```
Ruijie# show time-range
time-range entry: test (inactive)
  absolute end 01:02 02 February 2012
```

Prompt Message -

Platform Description -

7.4 time-range

Use this command to create a time range and enter time range configuration mode.
time-range *time-range-name*

Use the **no** form of this command to remove the configured time range.
no time-range *time-range-name*

Parameter Description

Parameter	Description
time-range-name	Time range name

Defaults No time range is configured by default.

Command Mode Global configuration mode

Default Level 2

Usage Guide	Some applications (such as ACL) may run based on time. For example, an ACL can be effective within certain time ranges of a week. To this end, first you must configure a time range. After the time range is created, you can configure relevant time control in time range mode.

Configuration Examples	The following example creates a time range.
	`Ruijie(config)# time-range no-http`
	`Ruijie(config-time-range)#`

Check Method	Use the **show time-range** [*time-range-name*] command to display the time range configuration.
Prompt Message	-
Platform Description	-

8 USB Commands

8.1 show usb

Use this command to display the information about the inserted USB device in the system.

show usb

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide Device information is displayed if there is a USB device. Otherwise, there is no output. If the USB disk is connected to the USB port on the device, the ID displayed by running the **show usb** command is X, the USB port number. If the USB disk is connected to the USB port on the device via a HUB, the ID displayed by running the **show usb** command is X-Y, in which X stands for the USB port number and Y for the HUB slot number.

Configuration Examples The following example displays the information about the USB device:

```
Ruijie# show usb
Device: Mass Storage:
ID: 0
URL prefix: usb0
Disk Partitions:
usb0(type:FAT32)
Size : 131,072,000B(125MB)
Available size: 1,260,020B(1.2MB)
```

In above information, the Mass Storage Device is the name of the device.

The meaning of the information is as below:

Table 1: the description of the field.

Field	Description
URL	Prefix used to access the USB device.
Size	Accessible size of the USB device.
Available size	Available size of the USB device.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

8.2 usb remove

Use this command to remove the USB device.

usb remove *device_id*

Parameter Description

Parameter	Description
device_id	Device ID of USB to be removed.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide Before pulling out the USB device, you need to remove the device using a command, so as to prevent errors that may occur because the system is using the device. If the device is removed successfully, the system will show a prompt, when you can pull out the device. If the device cannot be pulled out, it indicates that the system is using this USB device, so you have to wait a moment before removing it again.

Configuration Examples The following example removes the USB device.

```
Ruijie# usb remove 0
OK, now you can pull out the device 0.
*Jan  1 00:18:16: %USB-5-USB_DISK_REMOVED: USB Disk <Mass Storage> has been removed from USB port 0!
```

At this moment, the USB device can be plugged out.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9 HTTP Service Commands

9.1 enable service web-server

Use this command to enable the HTTP service function.

Use the **no** or **default** form of this command to disable the HTTP service function.

enable service web-server [**http** | **https** | **all**]

no enable service web-server [**http** | **https**]

default enable service web-server [**http** | **https**]

Parameter Description

Parameter	Description
http	Enables the HTTP service.
https	Enables the HTTPS service.
all	Enables both the HTTP service and the HTTPS service.

Defaults By default, the HTTP service function is disabled.

Command mode Global configuration mode.

Usage Guide If run a command ends with the keyword **all** or without keyword, it indicates enabling both the HTTP service and the HTTPS service; if run a command ends with keyword **http**, it indicates enabling the HTTP service; if run a command ends with keyword **https**, it indicates enabling the HTTPS service. Use the command **no enable service web-server** to disable the corresponding HTTP service.

Configuration Examples The following example enables both the HTTP service and the HTTPS service:

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#enable service web-server
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.2 http port

Use this command to configure the HTTP port number.

Use the **no** form of this command to restore the default HTTP port number.

http port *port-number*

no http port

Parameter Description

Parameter	Description
port-number	Configures the HTTP port number. The value includes 80, 1025 to 65,535.

Defaults The default HTTP port number is 80.

Command mode Global configuration mode.

Usage Guide Use this command to configure the HTTP port number.

Configuration Examples The following example configures the HTTP port number as 8080:

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#http port 8080
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.3 ip http secure-port

Use this command to configure the HTTPS port number. Use the **no** form of this command to restore the default settings.

ip http secure-port *port-number*

no ip http secure-port

Parameter Description

Parameter	Description
port-number	Configures the HTTPS port number. The value includes 4430, 1025 to 65,535.

Defaults The default HTTP port number is 4430.

Command mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example sets the HTTPS port number to 4443.

```
Ruijie(config)# ip http secure-port 4443
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.4 show web-server https certificate information

Use this command to display HTTPS certificate information.

show web-server https certificate information

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays HTTPS certificate information.

```
Ruijie# show web-server https certificate information
Source: Default
Certificate:
    Data:
        Version: 3 (0x2)
        Serial Number: 1 (0x1)
    Signature Algorithm: sha256WithRSAEncryption
        Issuer: CN=Self-Signed-CA472E87
        Validity
            Not Before: Feb 20 07:26:51 2019 GMT
            Not After : Feb 17 07:26:51 2029 GMT
        Subject: CN=Self-Signed-CA472E87
        Subject Public Key Info:
            Public Key Algorithm: rsaEncryption
```

```
            Public-Key: (2048 bit)
            Modulus:
                00:ec:39:13:5a:09:da:97:d1:83:8f:a7:77:cf:b4:
                88:96:a0:85:23:68:4d:5a:c6:d3:4b:d9:c0:d6:1b:
                f4:42:29:ce:33:2e:2f:79:5e:cc:bb:bd:5f:63:5b:
                41:f3:9f:fb:82:c7:ca:8a:21:a9:c2:fb:36:db:62:
                08:3c:05:b8:a2:47:07:1a:20:99:80:24:63:a4:08:
                66:22:86:b6:aa:46:43:8a:91:7d:99:f3:8a:7c:58:
                ac:1f:ef:6c:4c:d1:d6:bf:ef:a1:77:64:4b:53:16:
                29:2f:1c:e8:ec:d6:6b:b6:34:64:32:00:1f:09:30:
                69:8d:2e:85:d5:6a:db:45:cb:b8:fd:38:ba:bd:68:
                1d:de:38:65:ef:3f:c6:90:bf:ca:1a:9e:df:c3:75:
                5f:20:bd:61:b4:bd:43:6b:77:ef:25:c6:43:0a:0f:
                dc:5a:0e:28:53:37:14:77:8b:bd:ea:14:54:c5:e1:
                45:27:c9:14:63:37:67:bc:0f:09:15:1f:73:ae:bb:
                46:b1:ad:cd:23:89:fd:2c:0c:9f:a3:34:62:f0:14:
                0d:c8:92:09:68:df:8f:69:fb:1c:49:91:d8:1c:f7:
                ee:67:a3:25:c5:9a:e2:f6:1c:a8:8c:af:7e:08:29:
                44:32:b1:d8:a9:86:04:a2:80:65:24:47:56:f4:fd:
                e4:19
            Exponent: 65537 (0x10001)
        X509v3 extensions:
            X509v3 Basic Constraints:
                CA:FALSE
    Signature Algorithm: sha256WithRSAEncryption
         16:b8:e2:1e:45:13:56:9c:48:ef:ec:40:fb:9a:e3:4c:da:e4:
         95:c4:3b:92:10:9a:27:a0:da:ab:45:86:4c:39:fd:73:0c:e8:
         98:8b:0e:a4:28:72:66:0a:74:cc:9c:91:71:2f:94:dd:4b:4b:
         a2:54:e5:8f:47:82:bd:82:4d:70:93:6e:af:72:ce:cf:db:e2:
         36:b1:64:1a:1f:5e:c1:d9:57:12:15:5f:81:d3:ab:40:66:2a:
         3d:ab:d4:fb:24:a6:dd:1f:82:a2:33:9d:3d:da:a7:75:fa:0d:
         e6:be:1f:3b:a9:7f:d0:94:67:bf:e7:8b:19:32:5c:ea:0f:ae:
         3e:1e:41:55:06:c9:cb:42:b9:45:de:0e:d9:48:a5:75:90:5b:
         d7:89:ff:60:f2:31:ed:d7:52:0a:3d:91:87:c3:9a:85:76:8a:
         44:6f:c5:4e:9b:65:f6:78:cf:ee:7b:28:f5:10:c8:d1:39:3f:
         13:a7:96:f1:4b:11:5f:34:96:8f:13:b1:b6:de:9c:23:9e:f6:
         9d:b8:a3:f7:03:07:76:ce:bd:f6:76:1d:fc:5d:83:1e:8e:74:
         fb:78:b6:4a:ad:73:ce:e7:71:72:7d:0a:1e:49:5d:9e:65:30:
         aa:6f:b4:2f:9d:c3:e5:e6:38:de:0b:26:20:69:98:e4:6d:99:
         d2:15:ec:bd
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.5 show web-server status

Use this command to display the configuration and status of the Web service.

show web-server status

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the configuration and status of the Web service:

```
Ruijie#show web-server status
http server status : enabled
http server port : 80
https server status: enabled
https server port: 443
```

Related Commands

Command	Description
enable service web-server	Enables the HTTP service.
http port	Configures the HTTP port number.
http secure-port	Configures the HTTPS port number.

Platform Description N/A

9.6 upgrade web

Use this command to upgrade the Web package in local file system.

upgrade web *uri*

Parameter Description

Parameter	Description

uri	The storage path of the Web package.

Defaults N/A

Command mode Privileged EXEC mode

Usage Guide Please use the **copy** command to copy the Web package into the file system before you use this command to upgrade the Web package.

Configuration Examples The following example copies a Web package into the file system and upgrades the package.

```
Ruijie#copy tftp://192.168.23.24/web.upd flash:/web.upd
Ruijie#upgrade web flash:/web.upd
```

Related Commands

Command	Description
enable service web-server	Enables the HTTP service.

Platform Description N/A

9.7 upgrade web download

Use this command to download the Web package from the TFTP server and upgrade the package automatically.

upgrade web download { oob_tftp: *path* | **tftp:** *path* **}**

Parameter Description

Parameter	Description
oob_tftp: *path*	*path* indicates the storage path of the Web package on the TFTP server. **oob_tftp** indicates the system downloads the Web package from the TFTP server through the MGMT port and upgrades the Web package automatically. This parameter is supported only on the device supporting the MGMT port.
tftp: *path*	*path* indicates the storage path of the Web package on the TFTP server. **tftp** indicates the system downloads the Web package from the TFTP server through the physical port and upgrades the Web package automatically.

Defaults N/A

Command mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example downloads a Web package form the TFTP server and upgrade the package automatically.

```
Ruijie#upgrade web download tftp://192.168.23.24/web.upd
```

Related Commands

Command	Description
enable service web-server	Enables the HTTP service.

Platform Description N/A

9.8 webmaster level

Use this command to configure the username and password for Web login authentication. Use the **no** form of this command to restore the default setting.

webmaster level *privilege-level* **username** *name* **password** { *password* | [**0 | 7**] *encrypted-password* }

no webmaster level *privilege-level* [**username** name]

Parameter Description

Parameter	Description
privilege-level	Configures the user privilege-level.
name	Username.
password	Password.
0 | **7**	Password type; 0 indicates plaintext, 7 indicates ciphertext.
encrypted-password	Password text.

Defaults By default, two users are configured.

1. User1 is configured with privilege level 0, username of admin and plaintext password of admin.

Command mode Global configuration mode.

Usage Guide When HTTP is enabled, users can log in to the Web interface only after being authenticated. Use this command to configure the username and password for Web login authentication.

Use the **no webmaster level** *privilege-level* command to delete all the usernames and passwords with a specified *privilege-level.*

Use the **no webmaster level** *privilege-level* **username** *name* command to delete the specified

username and password.

Usernames and passwords come with three permission levels, each of which includes at most 10 usernames and passwords.

By default, the system creates the **admin** account. The account cannot be deleted and only the password of the account can be changed. The administrator account is the **admin** account, which corresponds to the level 0 permission. The administrator account owns all permissions on the Web page and can edit other management accounts and authorize the accounts to access pages.

Configuration Examples The following example configures the username and password for Web login authentication,

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#webmaster level 0 username ruijie password admin
```

Related Commands

Command	Description
enable service web-server	Enables the HTTP service.

Platform Description N/A

9.9 web-server https certificate

Use this command to install the HTTPS certificate. Use the **no** form of this command to restore the default settings.

web-server https certificate { **pem** *cert-filename* **private-key** *key-filename* } | { **pfx** *cert-filename* } [**password** *password-text*]

no web-server https certificate

Parameter Description

Parameter	Description
pem	Imports certificate and key file in pem format.
pfx	Imports the certificate in pfx format.
cert-filename	Specifies the name of the certificate in flash:.
key-filename	Specifies the name of the key file in flash:.
password-text	Specifies the decryption password for the key file.

Defaults N/A

Command mode Global configuration mode

Usage Guide Run the **copy** command to place the certificate and the key file into the flash partition before installing

the certificate. After installation, the certificate and the key file can be deleted.
Run the **no web-server https certificate** command to delete the HTTPS certificate. The auto-signed certificate will be used after the HTTPS certificate is deleted.

This command is not displayed in running-config.

After you install the HTTPS certificate, the browser may ask you to add trust before accessing Web management. It is recommended to close the browser and then open the Web management page.

Configuration Examples

The following example installs the HTTS certificate.

```
Ruijie#configure terminal
Ruijie(config)# web-server https certificate pfx usercert.pfx password 123456
*Feb 28 14:38:37: %HTTPD-4-CERT_CHANGE: HTTPS certificate changed.
% The certificate was successfully installed.
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

9.10 web-server https generate self-signed-certificate

Use this command to generate the HTTPS self-signed-certificate again.
web-server https generate self-signed-certificate

Parameter Description

Parameter	Description
N/A	N/A

Defaults

The HTTPS self-signed-certificate is enabled by default.

Command mode

Global configuration mode

Usage Guide

This command is a communication command. After running the command, please enter the information required by auto-signed certificate or press Ctrl+C to abort the operation.
If you have already installed HTTPS certificate, the HTTPS certificate will be used preferentially. The HTTPS certificate will not be replaced by the auto-signed certificate.

This command is not displayed in running-config.

After you install the HTTPS certificate, the browser may ask you to add trust before accessing Web management. It is recommended to close the browser and then open the Web

management page.

Configuration Examples The following example generates the HTTPS self-singed-certificate again.

```
Ruijie#configure terminal
Ruijie(config)# web-server https generate self-signed-certificate
RSA key modulus bits (1024~4096) [2048]:
Common Name (e.g. server IP) [Self-Signed-600B16C2]:
% Generate self-signed certificate successfully.
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10 UFT Commands

10.1 switch-mode mode_type slot slod_number

Use this command to switch the UFT operating mode for a line card in stand-alone mode.
switch-mode *mode_type* **slot** *slot_num*

Use this command to restore the Default UFT operating mode for the specified line card in stand-alone mode.
no switch-mode *mode_type* **slot** *slot_num*

Parameter Description

Parameter	Description
mode_type	Indicates the UFT operating mode. In stand-alone mode, the line card can operate in the following modes: ● **Default:** Default mode, which is applied to most of application scenarios. ● **bridge:** Bridge mode, which is applied to the application scenarios where pure Layer 2 services dominate. ● **gateway:** Gateway mode, which is applied to the application scenario in which Layer 3 services dominate. ● **gateway-max:** Gateway-max mode, which is applied to the application scenarios in which a large number of terminals are deployed. ● **gateway-ndmax:** Gateway-ndmax mode, which is applied to the

	application scenarios in which a large number of IPv6 terminals are deployed. ● **label:** Label mode, which is applied to the application scenarios that require a great amount of MPLS labels. ● **route-v4max:** IPv4 routing mode, which is applied to the application scenarios that require a great number of IPv4 routes. ● **route-v6max:** IPv6 routing mode, which is applied to the application scenarios that require a great number of IPv6 routes. ● **acl:** ACL mode. ● **acl-ipv4:** acl-IPv4 mode. ● **mc:** Multicast mode. ● **vxlan:** vxlan mode. ● **alpm:** alpm mode. ● **dual-stack-alpm:** dual-stack-alpm mode, which is applied to the application scenarios that require a great number of IPv4 and IPv6 routes. ● **ipv6-64-alpm:** ipv6-64-alpm mode, which is applied to the application scenarios that require a great number of IPv4 and IPv6 routes with subnet mask shorter than 64 bits. ● **fpem-alpm**: fpem-alpm mode, which is applied to the application scenarios that require a great number of FP tables and routing tables.
slot_num	Indicates the corresponding line card installed in the chassis.

Defaults The Default UFT operating mode is **Default**.

Command Mode Global configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example switches the UFT operating mode of the line card in slot 3 of the switch to bridge mode in stand-alone mode.

```
Ruijie(config)#switch-mode bridge slot 3
Please save current config and restart your device!
Ruijie(config)#show run

Building configuration...
Current configuration : 1366 bytes
```

```
version 11.0(1B2)
!
cwmp
!
install 3 M8600E-24XS4QXS-DB
!
sysmac 1414.4b34.5624
!
nfpp
!
switch-mode bridge slot 3
```

Verification Use the **show switch-mode status** command to display the current operating mode.

```
Ruijie#show switch-mode status
Slot No    Switch-Mode-Next      Switch-Mode-Current
-------    ----------------      -------------------
3         bridge               bridge
```

Prompt Messages N/A

Common Errors N/A

Platforms S5750C-48GT4XS-H, S5750C-28GT4XS-H, S6000C-48GT4XS-E, S5750C-28SFP4XS-H, M5000H-04XS, M5000H-01QXS and M6000E-04XS only support the following modes: default, gateway-max, route-v4max and route-v6max.

10.2 switch-mode mode_type switch switch_id slot slod_num

Use this command to switch the UFT mode for a line card in VSU mode.
switch-mode *mode_type* **switch** *switch_num* **slot** *slot_num*

Use this command to delete the UFT mode for the specified line card in VSU mode.
no switch-mode *mode_type* **switch** *switch_num* **slot** *slot_num*

Parameter Description

Parameter	Description
mode_type	Indicates the UFT operating mode. In VSU mode, the line card can operate in the following modes: ● **Default**: Default mode, which is applied to most of application scenarios.

	• **bridge**: Bridge mode, which is applied to the application scenarios where pure Layer 2 services dominate. • **gateway**: Gateway mode, which is applied to the application scenarios in which Layer 3 services dominate. • **gateway-max:** Gateway-max mode, which is applied to the application scenarios in which a large number of terminals are deployed. • **gateway-ndmax:** Gateway-ndmax mode, which is applied to the application scenarios in which a large number of IPv6 terminals are deployed. • **label:** Label mode, which is applied to the application scenarios that require a great amount of MPLS labels. • **route-v4max**: IPv4 routing mode, which is applied to the application scenarios that require a great number of IPv4 routes. • **route-v6max**: IPv6 routing mode, which is applied to the application scenarios that require a great number of IPv6 routes. • **acl:** ACL mode. • **acl-ipv4:** acl-IPv4 mode. • **mc:** Multicast mode. • **vxlan:** vxlan mode. • **alpm:** alpm mode. • **dual-stack-alpm:** dual-stack-alpm mode, which is applied to the application scenarios that require a great number of IPv4 and IPv6 routes. • **ipv6-64-alpm:** ipv6-64-alpm mode, which is applied to the application scenarios that require a great number of IPv4 and IPv6 routes with subnet mask shorter than 64 bits. **fpem-alpm**: fpem-alpm mode, which is applied to the application scenarios that require a great number of FP tables and routing tables.
switch_num	Indicates the chassis or box device number in VSU mode.
slot_num	Indicates the line card installed in the chassis device.

Defaults The default UFT operating mode is **default configuration**.

Command Mode Global configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example switches the UFT operating mode of the line card in slot 3 of switch1 to bridge mode in VSU mode.

```
Ruijie(config)#switch-mode bridge switch 1 slot 3
Please save current config and restart your device!
Ruijie(config)#show run

Building configuration...
Current configuration : 1485 bytes

version 11.0(1B2)
!
cwmp
!
install switch 1 RG-S7805E
install 1/3 M8600E-24XS4QXS-DB
!
sysmac 1414.4b34.5624
!
nfpp
!
switch-mode bridge switch 1 slot 3
```

Verification Use the **show switch-mode status** command to display the UFT mode.

```
Ruijie#show switch-mode status
Slot No         Switch-Mode-Next      Switch-Mode-Current
-------         ----------------      -------------------
Switch 1 slot 3   bridge               bridge
```

Prompt Messages N/A

Common Errors N/A

Platforms S5750C-48GT4XS-H, S5750C-28GT4XS-H, S6000C-48GT4XS-E, S5750C-28SFP4XS-H, M5000H-04XS, M5000H-01QXS and M6000E-04XS only support the following modes: default, gateway-max, route-v4max and route-v6max.

10.3 show switch-mode status

Use this command to display the UFT mode of a switch.

show switch-mode status

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode/global configuration mode/interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays the UFT mode of the switch in stand-alone mode.

```
Ruijie#show switch-mode status
Slot No    Switch-Mode-Next      Switch-Mode-Current
-------    ----------------      -------------------
```

3 bridge bridge

2The following example displays the UFT mode of the switch in VSU mode.

```
Ruijie#show switch-mode status
Slot No         Switch-Mode-Next      Switch-Mode-Current
-------         ----------------      -------------------
Switch 1 slot 3   bridge               bridge
```

Field Description:

Field	Description
Slot No	Displays only slot No. in stand-alone mode; displays both device No. and slot No. in VSU mode.
Switch-Mode-Next	Indicates the configured UFT mode, which will take place next time.
Switch Mode Current	Indicates the current UFT mode.

Prompt Messages N/A

Platforms N/A

10.4 show switch-mode *mode_type*

Use this command to software and hardware resource in a mode or in all modes.

show switch-mode all

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode, global configuration mode, interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays the UFT mode of the switch in stand-alone mode.

```
Ruijie#show switch-mode all
Current mode is marked by * :
Hardware:
----------
Switch Mode         L2_ENTRY   L3_ENTRY  L3_DEFIP   L3_DEFIP_128  ALPM-V4 ALPM-V6
-------------------------------------------------------------------------------
default             98304      212992    6144       1024          0       0       (*)
bridge              294912     16384     6144       1024          0       0
gateway             98304      212992    6144       1024          0       0
route-v4max         98304      212992    8192       0             0       0
route-v6max         98304      212992    6144       1024          0       0
alpm                32768      16384     4096       2048          196608  65536
vxlan               98304      212992    6144       1024          0       0
vxlan-border        98304      212992    6144       1024          0       0
default-overlay     98304      212992    6144       1024          0       0
bridge-overlay      294912     16384     6144       1024          0       0
gateway-overlay     98304      212992    6144       1024          0       0
gateway-max-overla  98304      212992    6144       1024          0       0
gateway-ndmax-over  98304      212992    6144       1024          0       0
route-v4max-overla  98304      212992    8192       0             0       0
route-v6max-overla  98304      212992    6144       1024          0       0
alpm-overlay        32768      16384     4096       2048          196608  65536

Software:
----------
Switch Mode         Ipv4_host  Ipv6_host Ipv4_lpm   Ipv6_lpm      Arp     Nd
-------------------------------------------------------------------------------
default             160000     70000     20000      10000         40000   40000   (*)
bridge              30000      12000     20000      10000         7000    7000
gateway             160000     70000     20000      10000         40000   40000
route-v4max         160000     70000     20000      10000         128000  40000
route-v6max         160000     70000     20000      10000         40000   40000
alpm                138000     25000     130000     17000         8000    8000
vxlan               160000     70000     20000      10000         121000  8000
vxlan-border        160000     70000     20000      10000         121000  8000
```

```
default-overlay      160000      70000      20000      10000          40000     40000
bridge-overlay       30000       12000      20000      10000          7000      7000
gateway-overlay      160000      70000      20000      10000          40000     8000
gateway-max-overla   160000      70000      20000      10000          106496    77824
gateway-ndmax-over   160000      70000      20000      10000          106496    77824
route-v4max-overla   160000      70000      20000      10000          40000     8000
route-v6max-overla   160000      70000      20000      10000          40000     8000
alpm-overlay         138000      25000      138000     17000          121000    16000
--------------------------------------------------------------------------------
```

Prompt Messages N/A

Platforms N/A

11 TCAM-MODE Commands

11.1 tcam-mode *mode-type*

Use this command to display the TCAM wok mode.

tcam-mode *mode-type*

Parameter Description

Parameter	Description
mode-type	TCAM work mode. default: Default mode, applied to most scenario. acl-max: ACL-MAX mode, applied to the scenario for TCAM resource integration. acl-slices-all: ACL-SLICES_ALL mode, supported by only S6510 and S6520 only.

Defaults N/A

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example sets the TCAM work mode to ACL-MAX.

```
Ruijie# configure terminal
Ruijie(config)# tcam-mode acl-max
Please remove ACL related config, save current config and restart your device!
Ruijie(config)#
```

The following example sets the TCAM work mode to ACL-SLICES_ALL.

```
Ruijie# configure terminal
Ruijie(config)# tcam-mode acl-slices-all
Please remove ACL related config, save current config and restart your device!
Ruijie(config)#
```

Platform Description N/A

11.2 show tcam-mode status

Use this command to display the TCAM wok mode.

show tcam-mode status

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide This command is used to display the TCAM configuration mode, save mode and running mode.

Configuration Examples The following example displays the TCAM work mode.

```
Ruijie(config)# show tcam-mode status
config-mode: acl-max
save-mode: acl-max
running-mode: acl-max
```

The following example displays the TCAM work mode.

```
Ruijie(config)# show tcam-mode status
config-mode: acl-slices-all
save-mode: acl-slices-all
running-mode: acl-slices-all
```

Platform Description N/A

12 ZAM Commands

12.1 show zam

Use this command to display the current configuration and status of ZAM.

show zam

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide N/A

Configuration Examples The following example displays the current configuration and status of ZAM.

```
Ruijie#
Ruijie#show zam
ZAM state          : disable
ZAM status         : Now is idle
ZAM manage interface: Mgmt 0

Ruijie#
```

Platform Description N/A

12.2 zam

Use this command to enable ZAM. Use the **no** form of this command to disable ZAM.

zam

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode	Global configuration mode
Usage Guide	

Configuration Examples	The following example disables ZAM.
	`Ruijie(config)# no zam`
	`Ruijie(config)#`

Platform Description	N/A

13 Module Hot-plugging/ unplugging Commands

13.1 module-offline slot-num

Use this command to isolate a module. Use the **no** form of this command to restore the default settings.

module-offline slot *slot-num*

module-offline *switch-id/slot-num*

Parameter Description

Parameter	Description
switch-id	Switch ID
slot-num	Slot number

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example isolates the module in slot 4.

```
Ruijie# module-offline slot 4
```

Related Commands

Command	Description
show version module detail	Displays the details of the module.

Platform Description N/A

13.2 sysmac

Use this command to configure a MAC address for the system. Use the **no** form of this command to remove the setting.

sysmac *mac-address*

no sysmac

Parameter Description

Parameter	Description
mac-address	Configures a MAC address for the system.

Defaults N/A

Command Mode Global configuration mode

Usage Guide
1. In general, the MAC address is programmed on the management board or the chassis flash. In virtual switching unit (VSU) mode, the system saves the MAC address in use in the configuration file to avoid flow interruption caused by MAC address change. The valid MAC address saved in the configuration file validates in preference after the device is restarted,
2. The MAC address of the gateway may be bound on some downstream devices. If the system is configured with the **auth-mode gateway** command, you can use the **sysmac** command to replace the MAC address of the gateway without changing the MAC address configuration on the downstream devices.
3. The configuration takes effect after the device is restarted.

Configuration Examples The following example deletes the MAC address saved in the configuration file.

```
Ruijie#no sysmac
```

The following example configures MAC address 00d0.f822.33e2 for the system.

```
Ruijie#sysmac 00d0.f822.33e2
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

13.3 remove configuration device device-id

Use this command to remove the configuration on a VSU device, which validates in VSU mode after restart.

remove configuration device *device-id*

Parameter Description

Parameter	Description
device-id	The chassis number.

Defaults N/A

Command Mode Global configuration mode

Usage Guide This command is used to remove the configuration on a VSU device. It validates after the device is restarted.

Configuration Examples: The following example clears the configuration on device 1.

```
Ruijie(config)# remove configuration device 1
```

Related Commands

Command	Description
N/A	N/A

Platform Description: N/A

13.4 show alarm

Use this command to display system alarm messages, concerning card startup failure, temperature, power, and fan alarms.

show alarm

Parameter Description

Parameter	Description
N/A	N/A

Defaults: N/A

Command Mode: Privileged EXEC mode

Usage Guide: N/A

Configuration Examples: The following example displays system alarm messages.

```
Ruijie#show alarm
Dev  Module         Level    Info
---  --------------- --------
--------------------------------------------------------------------
1    DEV           Warning  Some fans are absent.
1    DEV           Critical Some cards are in cannot-startup state.
```

Field	Description
Dev	Device ID
Module	Service module
Level	Alarm level, including Critical and Warning
Info	Alarm cause, such as system power shortage fan absence and card startup failure

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

13.5 show manuinfo

Use this command to display asset information about all independent components in the system for asset management, including the chassis, fan, power, management board, and line card. The information covers the ID, slot number, name, serial number (SN), software and hardware version, and MAC address. Not all devices support display of the same information and only supported information is printed.

show manuinfo

Parameter Description	Parameter	Description
	N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to display asset information about all independent components in the system

Configuration Examples The following example displays asset information of the single physical device.

```
Ruijie#show manuinfo
Device 1
   Location:                Chassis
   Device name:             RG S12006
   Device Serial Number:      62150129A8B0DAF0F0321
   Hardware Version:         V1.0
   Mac Address:             00.D0.F8.00.11.22

Device 2
   Location:                Slot-M1
   Device name:             M12000 CM
   Device Serial Number:      32150129A8B0DAF0F0321
   Hardware Version:         V1.0
   Software Version:         RGOS 10.4(3b17) Release 129646
   Mac Address:             00.D0.F8.00.11.34
```

```
Device 3
   Location:                Slot-1
   Device name:             M12000-04XFP-EA
   Device Serial Number:      32150129A8B0DAF0F0322
   Hardware Version:         V1.0
   Software Version:         RGOS 10.4(3b17) Release 129646

Device 4
   Location:                Slot-2
   Device name:             M12000-04XFP-EA
   Device Serial Number:      32150129A8B0DAF0F0323
   Hardware Version:         V1.0
   Software Version:         RGOS 10.4(3b17) Release 129646

Device 5
   Location:                Power 1
   Device name:             RG PD1200I
   Device Serial Number:      42150129A8B0DAF0F0321
   Hardware Version:         V1.0

Device 6
   Location:                Power 2
   Device name:             RG PD1200I
   Device Serial Number:      42150129A8B0DAF0F0322
   Hardware Version:         V1.0

Device 7
   Location:                FAN
   Device name:             M12000 FAN
   Device Serial Number:      52150129A8B0DAF0F0321
    Hardware Version:           V1.0
```

The following example displays asset information in VSU mode.

```
Ruijie#show manuinfo
Device 1
   Location:                Chassis 1
   Device name:             RG S12006
   Device Serial Number:      62150129A8B0DAF0F0321
   Hardware Version:         V1.0
   Mac Address:             00.D0.F8.00.11.22

Device 2
   Location:                Slot-1/M1
   Device name:             M12000 CM
   Device Serial Number:      32150129A8B0DAF0F0321
```

```
   Hardware Version:          V1.0
   Software Version:          RGOS 10.4(3b17) Release 129646
   Mac Address:               00.D0.F8.00.11.56

Device 3
   Location:                  Slot-1/1
   Device name:               M12000-04XFP-EA
   Device Serial Number:       32150129A8B0DAF0F0322
   Hardware Version:          V1.0
   Software Version:          RGOS 10.4(3b17) Release 129646

Device 4
   Location:                  Slot-1/2
   Device name:               M12000-04XFP-EA
   Device Serial Number:       32150129A8B0DAF0F0323
   Hardware Version:          V1.0
   Software Version:          RGOS 10.4(3b17) Release 129646

Device 5
   Location:                  Power 1/1
   Device name:               RG PD1200I
   Device Serial Number:       42150129A8B0DAF0F0321
   Hardware Version:          V1.0

Device 6
   Location:                  Power 1/2
   Device name:               RG PD1200I
   Device Serial Number:       42150129A8B0DAF0F0322
   Hardware Version:          V1.0

Device 7
   Location:                  FAN 1
   Device name:               M12000 FAN
   Device Serial Number:       52150129A8B0DAF0F0322
   Hardware Version:          V1.0

Device 8
   Location:                  Chassis 2
   Device name:               RG S12006
   Device Serial Number:       62150129A8B0DAF0F0322
   Hardware Version:          V1.0
   Software Version:          RGOS 10.4(3b17) Release 129646
   Mac Address:               00.D0.F8.00.11.33
```

```
Device 9
   Location:                Slot-2/M1
   Device name:             M12000 CM
   Device Serial Number:      32150129A8B0DAF0F0324
   Hardware Version:         V1.0
   Software Version:         RGOS 10.4(3b17) Release 129646
   Mac Address:             00.D0.F8.00.11.22

Device 10
   Location:                Slot-2/1
   Device name:             M12000-04XFP-EA
   Device Serial Number:      32150129A8B0DAF0F0325
   Hardware Version:         V1.0
   Software Version:         RGOS 10.4(3b17) Release 129646

Device 11
   Location:                Slot-2/2
   Device name:             M12000-04XFP-EA
   Device Serial Number:      32150129A8B0DAF0F0326
   Hardware Version:         V1.0
   Software Version:         RGOS 10.4(3b17) Release 129646

Device 12
   Location:                Power 2/1
   Device name:             RG PD1200I
   Device Serial Number:      42150129A8B0DAF0F0323
   Hardware Version:         V1.0

Device 13
   Location:                Power 2/2
   Device name:             RG PD1200I
   Device Serial Number:      42150129A8B0DAF0F0324
   Hardware Version:         V1.0

Device 14
   Location:                FAN 2
   Device name:             M12000 FAN
   Device Serial Number:      52150129A8B0DAF0F0322
    Hardware Version:           V1.0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

13.6 show sysmac

Use this command to display the MAC address of the current system.

show sysmac

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the MAC address of the current system.

```
Ruijie#show sysmac
00d0.f822.33e2
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

13.7 show version module detail [*module-num*]

Use this command to display the details of the module.

show version module detail [*module-num*]

Parameter Description

Parameter	Description
module-num	(Optional) Module number.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide Use this command to display details of the module

Configuration Examples

```
Ruijie# show version module detail 2
Device  : 1
Slot    : 2
User Status :    none
Software Status: none
Online Module :
Type  :
Ports   : 0
Version :
Configured Module :
Type  :
Ports   :
Version :
Ruijie#
```

Related Commands

Command	Description
show version slots	Displays slot details.

Platform Description N/A

13.8 show version slots [*slot-num*]

Use this command to display the details of the slot.

show version slots [*slot-num*]

Parameter Description

Parameter	Description
num	(Optional) Slot number.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration

```
Ruijie# show version slots
```

Examples

```
Dev Slot  Configured Module Online Module  User Status   Software Status
--- ----  -----------------   -----  --------------
1 1    none         none
1 2 M8606-24SFP/12GT M8606-24SFP/12GT installed none
1 3 M8606-2XFP M8606-2XFP uninstalled  cannot startup
1 4 M8606-24GT/12SFP M8606-24GT/12SFP installed ok
1 M1 M8606-CM   M8606-CM              master
1   M2
```

Related Commands

Command	Description
show version moduel detail	Displays the details of the module.

Platform Description N/A

14 Supervisor Module Redundancy Commands

14.1 auto-sync time-period

Use this command to configure the auto-sync time-period of runing-config and startup-config when the dual supervisor module is redundant. Use the **no** form of this command to disable automatic synchronization for the dual supervisor modules. Use the **default** form of this command to restore the default automatic synchronization time period for the dual supervisor modules.

auto-sync time-period *value*

no auto-sync time-period

default auto-sync time-period

Parameter Description

Parameter	Description
value	Automatic synchronization time interval measured in seconds, in the range from one second to one month (2,678,400 seconds).

Defaults The default is one hour (3600 seconds) by default.

Command Mode Redundancy configuration mode

Usage Guide N/A

Configuration Examples The following example sets the automatic synchronization interval to 60 seconds.

```
Ruijie(config)# redundancy
Ruijie(config-red)# auto-sync time-period 60
Redundancy auto-sync time-period: enabled (60 seconds).
Ruijie(config-red)# exit
```

The following example disables automatic synchronization.

```
Ruijie(config)# redundancy
Ruijie(config-red)# no auto-sync time-period
Redundancy auto-sync time-period: disabled.
Ruijie(config-red)# exit
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

14.2 redundancy

Use this command to enter redundancy configuration mode.

redundancy

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example enters redundancy configuration mode.

```
Ruijie# config terminal
Ruijie(config)# redundancy
Ruijie(config-red)# exit
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

14.3 redundancy forceswitch

Use this command to perform active/standby supervisor module switchover.

redundancy forceswitch

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide If this command is executed on the active supervisor module, the module will be reset and the standby supervisor module will act as an active supervisor module.
The following conditions are required to perform hot backup switchover:

- This command is executed on the active supervisor module. There is a standby supervisor module.
- Hot backups on all virtual switch devices (VSDs) are in real-time status.
- Hot backup switchovers on VSDs are not prevented temporarily by any service entity.

When there are multiple VSDs, the system judges whether the hot backup on each VSD allows active/standby switchover; If any VSD does not allow the switchover, the command fails. Otherwise, active/standby switchovers are enforced on all VSDs.

Configuration Examples The following example performs active/standby supervisor module switchover.

```
Ruijie# redundancy forceswitch
This operation will reload the master unit and force switchover to the slave unit. Are you sure to continue? [N/y] y
```

Related Commands

Command	Description
reload	Resets the active supervisor module.

Platform Description N/A

14.4 redundancy reload

Use this command to reset the supervisor module.
redundancy reload { **peer** | **shelf** [*switchid*] }

Parameter Description

Parameter	Description
peer	Resets the standby supervisor module.
shelf	Resets both the active and standby supervisor modules on the device which works as a single physical device. The device ID should be specified on the device which works as a Virtual Switching Unit (VSU) device.
switchid	VSU device ID, supported on a VSU device. This parameter is not supported in stand-alone mode. It must be contained in the **redundancy reload shelf** command in VSU mode.

Defaults N/A

Command Privileged EXEC mode

Mode

Usage Guide Resetting the supervisor module does not affect data forwarding. Data forwarding will not be interrupted and the user session information will not be missing.
The **redundancy reload shelf** command is used to reset the device which works as a single physical device. The **redundancy reload shelf** *switchid* command is used to reset the specified device which works as a VSU device.

Configuration Examples The following example resets the standby supervisor module.

```
Ruijie# redundancy reload peer
This operation will reload the current slave unit. Are you sure to continue?
[N/y] y
Preparing to reload peer!
```

The following example resets device 2 which works as a VSU device.

```
Ruijie# redundancy reload shelf 2
This operation will reload the device 2. Are you sure to continue? [N/y] y
Preparing to reload device 2!
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

14.5 show redundancy states

Use this command to display the current redundancy state.
show redundancy states

Parameter Description

Parameter	Description
states	Displays the redundancy status of the active or the standby devices.

Defaults N/A

Command Mode User EXEC mode / Privileged EXEC mode

Usage Guide Currently, only 1:1 hot backup (for the global active module and standby module) is supported in the VSU mode. Therefore, only the hot backup state of the local and peer device is displayed.
If the system is configured with multiple VSDs, the hot backup state of all VSDs is displayed in VSD 0 in global configuration mode.

Configuration Examples

The following example displays the redundancy states of active supervisor module.

```
Ruijie> enable
Ruijie# show redundancy states
Redundancy role: master
Redundancy state: realtime
Auto-sync time-period: 3600 s
```

The following example displays the redundancy state of the standby supervisor module.

```
Ruijie> enable
Ruijie# show redundancy states
Redundancy role: slave
Redundancy state: realtime
```

The following example displays the redundancy state of the candidate supervisor module.

```
Ruijie> enable
Ruijie# show redundancy states
Redundancy role: candidate
Redundancy state: none
```

The following example displays the redundancy state of the active supervisor module with VSD1and VSD2 configured.

```
 Ruijie> enable
Ruijie# show redundancy states
Redundancy role: master
Redundancy state: realtime
Auto-sync time-period: 3600 s

VSD vsd1 redundancy state: realtime
VSD vsd2 redundancy state: realtime
```

Field	Description
role	The role of the supervisor module.
state	The state of the supervisor module.
Auto-sync time-period	Displayed on the active supervisor module. The configuration file synchronizes the time interval automatically. “disabled” indicates no automatic synchronization.
VSD <vsd name> redundancy state	Displays hot backup state of the specified VSD in VSD 0.

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

15 Syslog Commands

15. 1 clear logging

Use this command to clear the logs from the buffer in privileged EXEC mode.

clear logging

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command clears the log packets from the memory buffer. You cannot clear the statistics of the log packets.

Configuration Examples The following example clears the log packets from the memory buffer.

```
Ruijie# clear logging
```

Related Commands

Command	Function
logging on	Turns on the log switch.
show logging	Displays the logs in the buffer.
logging buffered	Records the logs in the memory buffer.

Platform Description N/A

15.2 logging

Use this command to send the log message to the specified syslog server.

logging { *ip-address* | **ipv6** *ipv6-address* } [**udp-prot** *port*] [**vrf** *vrf-name*]

Use this command to delete the specified syslog server.

no logging { *ip-address* [**vrf** *vrf-name*] | **ipv6** *ipv6-address* }

Use this command to restore the default port 514.

no logging { *ip-address* [**vrf** *vrf-name*] | **ipv6** *ipv6-address* } **udp-prot**

Parameter Description

Parameter	Description

ip-address	Sets the IP address of the host receiving log messages.
vrf-name	Sets the VRF instance connecting with the host.
ipv6-address	Sets the IPv6 address of the host receiving log messages.
udp-port *port*	Sets the port number of the host receiving log messages. The default is 514.

Defaults No log message is sent to syslog server by default.

Command Mode Global configuration mode

Usage Guide This command is used to configure a syslog server to receive log messages from the device. You can configure up to five syslog servers, log messages are sent to all configured syslog servers simultaneously,

Configuration Examples The following example configures a syslog server with IP address 202.101.11.1.

```
Ruijie(config)# logging 202.101.11.1
```

The following example configures a syslog server with IP address 10.1.1.100 and port number 8099.

```
Ruijie(config)# logging 202.101.11.1 udp-port 8099
```

The following example configures a syslog server with IPv6 address AAAA:BBBB::FFFF.

```
Ruijie(config)# logging ipv6 AAAA:BBBB::FFFF
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

15.3 logging buffered

Use this command to set the memory buffer parameters (log severity, buffer size) for logs at global configuration layer. Use the **no** form of the command to disable recording logs in the memory buffer. Use the **default** form of this command to restore the default setting.

logging buffered [*buffer-size* | *level*]

no logging buffered

default logging buffered

Parameter Description

Parameter	Description
buffer-size	Size of the buffer is related to the specific device type: 1. For the kernel / aggregation switches, 4 K to 10 M bytes. 2. For the access switches, 4 K to 1 M Bytes. 3. For other devices, 4 K to 128 K Bytes.

level	Severity of logs, from 0 to 7. The name of the severity or the numeral can be used.

Defaults The buffer size is related to the specific device type.
1. kernel switches: 1 M Bytes;
2. aggregation switches: 256 K Bytes;
3. access switches: 128 K Bytes;
4. other devices: 4 K Bytes
The log severity is 7.

Command Mode Global configuration mode

Usage Guide The memory buffer for log is used in recycled manner. That is, when the memory buffer with the specified size is full, the oldest information will be overwritten. To show the log information in the memory buffer, run the **show logging** command in privileged user mode.
The logs in the memory buffer are temporary, and will be cleared in case of device restart or the execution of the **clear logging** command in privileged user mode. To trace a problem, it is required to record logs in flash or send them to Syslog Server.
The log information is classified into the following 8 levels (Table 1):

Table-1

Keyword	Level	Description
Emergencies	0	Emergency case, system cannot run normally
Alerts	1	Problems that need immediate remedy
Critical	2	Critical conditions
Errors	3	Error message
warnings	4	Alarm information
Notifications	5	Information that is normal but needs attention
informational	6	Descriptive information
Debugging	7	Debugging messages

Lower value indicates higher level. That is, level 0 indicates the information of the highest level. When the level of log information to be displayed on devices is specified, the log information at or below the set level will be allowed to be displayed.

NOTE

After running the system for a long time, modifying the log buffer size especially in condition of large buffer may fails due to the insufficent availble continuous memory. The failure message will be shown. It is recommended to modify the log buffer size as

soon as the system starts.

Configuration Examples The following example allows logs at and below severity 6 to be recorded in the memory buffer sized 10,000 bytes.

```
Ruijie(config)# logging buffered 10000 6
```

Related Commands

Command	Description
logging on	Turns on the log switch.
show logging	Displays the logs in the buffer.
clear logging	Clears the logs in the log buffer.

Platform Description N/A

15.4 logging console

Use this command to set the severity of logs that are allowed to be displayed on the console in global configuration mode. Use the **no** form of this command to prohibit printing log messages on the console.

logging console [*level*]

no logging console

Parameter Description

Parameter	Description
level	Severity of log messages, 0 to 7. The name of the severity or the numeral can be used. For the details of log severity, see table 1.

Defaults The default is debugging (7).

Command Mode Global configuration mode

Usage Guide When a log severity is set, the log messages at or below that severity will be displayed on the console.

The **show logging** command displays the related setting parameters and statistics of the log.

Configuration Examples The following example sets the severity of log that is allowed to be displayed on the console as 6:

```
Ruijie(config)# logging console informational
```

Related Commands

Command	Description
logging on	Turns on the log switch.
show logging	Displays the logs and related log configuration parameters in the buffer.

Platform Description N/A

15.5 logging count

Use this command to enable the log statistics function in global configuration mode. Use the **no** form of this command to restore the default setting.

logging count

no logging count

Parameter Description

Parameter	Description
N/A	N/A

Defaults The log statistics function is disabled by default.

Command Mode Global configuration mode

Usage Guide This command enables the log statistics function. The statistics begins when the function is enabled. If you run the **no logging count** command, the statistics function is disabled and the statistics data is deleted.

Configuration Examples The following example enables the log statistics function:

```
Ruijie(config)# logging count
```

Related Commands

Command	Description
show logging count	Displays log information about modules of the system.
show logging	Displays basic configuration of log modules and log information in the buffer.

Platform Description N/A

15.6 logging facility

Use this command to configure the device value of the log information in global configuration mode. Use the **no** form of the command to restore the default setting.

logging facility *facility-type*

no logging facility

Parameter Description

Parameter	Description
facility-type	Syslog device value. For specific settings, refer to the usage guide.

Defaults

The default is 23 if the RFC5424 format is enabled (Local7, local use).
The default is 16 if the RFC5424 format is disabled (Local0, local use).

Command Mode

Global configuration mode

Usage Guide

The following table (Table-2) is the possible device values of Syslog:

Numerical Code	Facility
0 (kern)	Kernel messages
1 (user)	User-level messages
2 (mail)	Mail system
3 (daemon)	System daemons
4 (auth1)	security/authorization messages
5 (syslog)	Messages generated internally by syslogd
6 (lpr)	Line printer subsystem
7 (news)	USENET news
8 (uucp)	Unix-to-Unix copy system
9 (clock1)	Clock daemon
10 (auth2)	security/authorization messages
11 (ftp)	FTP daemon
12 (ntp)	NTP subsystem
13 (logaudit)	log audit
14 (logalert)	log alert
15 (clock2)	clock daemon
16 (local0)	Local use
17 (local1)	Local use
18 (local2)	Local use
19 (local3)	Local use
20 (local4)	Local use
21 (local5)	Local use
22 (local6)	Local use
23 (local7)	Local use

The default device value of RGOS is 23 (local 7).

Configuration Examples The following example sets the device value of **Syslog** as **kernel**:

```
Ruijie(config)# logging facility kern
```

Related Commands

Command	Description
logging console	Sets the severity of logs that are allowed to be displayed on the console.

Platform Description N/A

15.7 logging file

Use this command to save log messages in the log file, which can be saved in hardware, expanded FLASH, USB or SD card. Use the **no** form of this command to restore the default setting,

logging file { **flash:***filename* | **usb0:***filename* | **usb1:***filename*} [*max-file-size*] [*level*]

no logging file

Parameter Description

Parameter	Description
flash	Saves the log file in expanded FLASH.
usb0	Saves the log file in USB0. This parameter is supported by the device with one USB connector and the USB extension device.
usb1	Saves the log file in USB1, This parameter is supported by the device with two USB connectors and the USB extension device.
filename	Sets the file name. The file type is omitted, which is fixed as txt.
max-file-size	Sets the maximum file size, in the range from 128K to 6M bytes, The default is 128K,
level	Sets the level of the log message saved in the log file, which can be either the level name or the level number. The default is 6. See Usage Guide for details.

Defaults Log messages are not saved in expanded FLASH by default.

Command Mode Global configuration mode

Usage Guide You can save log messages in expanded FLASH if you don't want to transmit log messages on the network or there is no syslog server,

The log file cannot be configured with the suffix, which is fixed as txt.

If there is no expanded FLASH, the **logging file flash** command is hidden automatically and cannot be configured.

Keyword	Level	Description

Emergencies	0	Emergency case. The system fails to run.
Alerts	1	Problem that call for immediate solution.
Critical	2	Critical message.
Errors	3	Error message.
warnings	4	Alarm message.
Notifications	5	message that is normal but calls for attention.
informational	6	Descriptive message.
Debugging	7	Debugging message

Configuration Examples The following example saves the log message in expanded FLASH and sets file name, file size and log level to syslog.txt, 128K and 6 respectively.

```
Ruijie(config)# logging file flash:syslog
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

15.8 logging file numbers

Use this command to set the number of log files written into FLASH. Use the **no** form of this command to restore the default setting.

logging file numbers *numbers*

no logging file numbers

Parameter Description

Parameter	Description
numbers	Sets the number of log files written into FLASH, in the range from 2 to 32.

Defaults The default is 16.

Command Mode Global configuration mode

Usage Guide The system does not delete previously generated log files even if you change this configuration, Therefore, you need to delete the log files manually to save FLASH size (you can send log files to the

server through TFTP before that). For example, 16 log files are generated by default before you want to change the number to 2. New logs are overwritten constantly in log files indexed 0 to 1. However, log files indexed from 2 to 16 remain. You can delete these log files manually as needed.

Configuration Examples The following example sets the number of log files written into FLASH to 8.

```
Ruijie(config)# logging file numbers 8
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

15.9 logging flash flush

Use this command to write log messages in the system buffer into the flash file immediately.

logging flash flush

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Global configuration mode

Usage Guide In general, the log messages are cached in the log buffer. Only when the buffer is full or the timer expires are log messages written into the flash file. This command is used to write log messages in the system buffer into the flash file immediately.

The **logging flash flush** command takes effect only once for each configuration. The log messages cached in the buffer are written into the flash file immediately after configuration.

Configuration Examples The following example writes log messages in the system buffer into the flash file immediately.

```
Ruijie(config)# logging flash flush
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

15.10 logging flash interval

Use this command to set the interval to write log messages into the flash file, Use the **no** form of this command to restore the default setting.

logging flash interval *seconds*

no logging flash interval

Parameter Description

Parameter	Description
interval *seconds*	The interval to write log messages into the flash file, in the range from 1 to 57840 in the unit of seconds.

Defaults The default is 3600.

Command Mode Global configuration mode

Usage Guide This command is used to set the interval to write log messages into the flash file. The timer starts after configuration, If you want to restore the interval to 3600 seconds, use the **no logging flash interval** command.

To avoid writing log messages into the flash file too frequently, it is not recommended to set a short interval.

Configuration Examples The following example sets the interval to write log messages into the flash file to 300 seconds.

```
Ruijie(config)# logging flash interval 300
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

15.11 logging filter direction

Use this command to filter the log messages destined to a certain direction. Use the **no** form of this command to restore the default setting.

logging filter direction { **all** | **buffer** | **file** | **server** | **terminal** }

no logging filter direction { **all** | **buffer** | **file** | **server** | **terminal** }

Parameter Description

Parameter	Description
all	Log messages destined to all directions are filtered, including

	console, VTY terminal, log buffer, log file and log server.
buffer	Log messages destined to the log buffer are filtered, including log messages displayed by running the **show logging** command.
file	Log messages destined to the log file are filtered.
server	Log messages destined to the log server are filtered.
terminal	Log messages destined to the console and the VTY terminal (including Telnet and SSH).

Defaults Log messages destined to all directions are filtered by default.

Command Mode Global configuration mode

Usage Guide In general, log messages destined to all directions are filtered, including console, VTY terminal, log buffer, log file and log server. If you want to filter log messages destined to a certain direction, the terminal for instance, configure the **terminal** parameter.

Configuration Examples The following example filters log messages destined to the terminal (including the console and the VTY terminal).

```
Ruijie(config)# logging filter direction terminal
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

15.12 logging filter type

Use this command to configure the filter type of log messages. Use the **no** form of this command to restore the default setting.

logging filter type { **contains-only** | **filter-only** }

no logging filter type

Parameter Description

Parameter	Description
contains-only	The log message containing the key word of the filter rule is printed.
filter-only	The log message containing the key word of the filter rule is filtered.

Defaults The default filter type is filter-only.

Command Global configuration mode

Mode

Usage Guide

1. When too many log messages are printed, the terminal screen keeps being refreshed. If you are not concerned with these log messages, use the “filter-only” filter type to filter the log messages,
2. If you are concerned with certain log messages, use the “contains-only” filter type to print log messages containing the key word of the filter rule, so as to monitor whether certain events happen.

In real operation, the contains-only and the fitler-only filter types cannot be configured at the same time.

If you configure the filter direction and the filter type without configuring the filter rule, the log messages are not filtered.

Configuration Examples

The following example sets the filter type to contains-only.

```
Ruijie(config)# logging filter type contains-only
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

15.13 logging filter rule

Use this command to configure the filter rule of the log message,

logging filter rule { **exact-match module** *module-name* **mnemonic** *mnemonic-name* **level** *level* | **single-match** [**level** *level* | **mnemonic** *mnemonic-name* | **module** *module-name*] }

Use this command to delete the “exact-match” filter rule.

no logging filter rule exact-match [**module** *module-name* **mnemonic** *mnemonic-name* **level** *level*]

Use this command to delete the “single-match” filter rule.

no logging filter rule single-match [**level** *level* | **mnemonic** *mnemonic-name* | **module** *module-name*]

Parameter Description

Parameter	Description
exact-match	Exact-match filter rule. Fill in all the following three parameters.
single-match	Single-match filter rule. Fill in one of the following three parameters.
module *module-name*	Module name.
mnemonic *mnemonic-name*	Mnemonic name.
level *level*	Log level,

Defaults

No filter rule is configured by default,

Command Mode Global configuration mode

Usage Guide If you want to filter a specific log message, use the “exact-match” filter rule and fill in all three parameters, namely, module name, mnemonic name and log level.
If you want to filter a specific kind of log messages, use the “single-match” filter rule and fill in one of three parameters, namely, module name, mnemonic name and log level.
When configured with the same module name, mnemonic name or log level, the “single-match” filter rule has a higher priority than the “exact-match” filter rule,

Configuration Examples The following example configures the “exact-match” filter rule with parameters of module name LOGIN, log level 5 and mnemonic name LOGOUT.

```
Ruijie(config)# logging filter rule exact-match module LOGIN mnemonic LOGOUT
level 5
```

The following example configures the “single-match” filter rule with the parameter of module name SYS.

```
Ruijie(config)# logging filter rule single-match module SYS
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

15.14 logging life-time

Use this command to configure the preservation duration of logs in expanded FLASH. Use the **no** form of this command to restore the default setting.
logging life-time level *level days*
no logging life-time level *level*

Parameter Description

Parameter	Description
level	Sets the log level, which can be either the level name or the level number.
days	Sets the preservation duration of logs.

Defaults No preservation duration is set by default.

Command Mode Global configuration mode

Usage Guide Due to difference in expanded FLASH size and log level, logs with different levels can be configured

with different preservation durations.
Once log preservation based on time is enabled, log preservation based on file size is disabled automatically. The log files are stored under the syslog/ directory of the expanded FLASH,

Configuration Examples The following example sets the preservation duration of logs whose level is 6 to 10 days.

```
Ruijie(config)# logging life-time level 6 10
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

15.15 logging monitor

Use this command to set the severity of logs that are allowed to be displayed on the VTY window (telnet window, SSH window, etc.) in global configuration mode. Use the **no** form of this command to disable this function.

logging monitor [*level*]

no logging monitor

Parameter Description

Parameter	Description
level	Severity of the log message. The name of the severity or the numeral can be used. For the details of log severity, see Table-1.

Defaults The default is debugging (7).

Command Mode Global configuration mode

Usage Guide To print log information on the VTY window, run the **terminal monitor** command in privileged EXEC mode. The level of logs to be displayed is defined by **logging monitor**.
The log level defined with "Logging monitor" is for all VTY windows.

Configuration Examples The following example sets the severity of log that is allowed to be printed on the VTY window as 6:

```
Ruijie(config)# logging monitor informational
```

Related Commands

Command	Description
logging on	Turns on the log switch.

show logging	Displays the log messages and related log configuration parameters in the buffer.

Platform Description N/A

15.16 logging on

Use this command globally to allow logs to be displayed on different devices. Use the **no** form of this command to disable this fucntion.

logging on

no logging on

Parameter Description

Parameter	Description
N/A	N/A

Defaults Logs are allowed to be displayed on different devices.

Command Mode Global configuration mode

Usage Guide Log information can not only be shown in the Console window and VTY window, but also be recorded in different equipments such as the memory buffer, the expanded FLASH and the Syslog Server. This command is the total log switch. If this switch is turned off, no log will be displayed or recorded unless the severity level is greater than 1.

Configuration Examples The following example disables the log switch on the device.

```
Ruijie(config)# no logging on
```

Related Commands

Command	Description
logging buffered	Records the logs to a memory buffer.
logging server	Sends logs to the Syslog server.
logging file flash:	Records logs on the expanded FLASH.
logging console	Allows the log level to be displayed on the console.
logging monitor	Allows the log level to be displayed on the VTY window (such as telnet window) .
logging trap	Sets the log level to be sent to the Syslog server.

Platform Description N/A

15.17 logging rate-limit

Use this command to enable log rate limit function to limit the output logs in a second in the global configuration mode. Use the **no** form of this command to disable this function.

logging rate-limit { *number* | **all** *number* | **console** { *number* | **all** *number* } } [**except** *severity*]

no logging rate-limit

Parameter Description

Parameter	Description
number	The number of logs that can be processed in a second in the range from 1 to 10000.
all	Sets rate limit to all the logs with severity level 0 to 7.
console	Sets the amount of logs that can be shown in the console in a second.
except	By default, the severity level is error (3). The rate of the log whose severity level is less than or equal to error (3) is not controlled.
severity	Log severity level in the range from 0 to 7. The lower the level is, the higher the severity is.

Defaults The log rate limit function is disabled by default.

Command Mode Global configuration mode

Usage Guide Use this command to control the syslog outpt to prevent the massive log output.

Configuration Examples The following example sets the number of the logs (including debug) that can be processed in a second as 10. However, the logs with warning or higher severity level are not controlled:

```
Ruijie(config)#logging rate-limit all 10 except warnings
```

Related Commands

Command	Description
show logging count	Displays log information about modules of the system.
show logging	Displays basic configuration of log modules and log information in the buffer.

Platform Description N/A

15.18 logging rd on

Use this command in global configuration mode on the host to enable the log re-direction function and allow re-directing logs on slave or backup devices to the host in the VSU environment. Use **no** form of this command to disable this function.

logging rd on

no logging rd on

Parameter Description

Parameter	Description
N/A	N/A

Defaults The log re-direction function is enabled by default.

Command Mode Global configuration mode

Usage Guide The log information on slave or back devices not only can be shown on the Console window of slave or backup devices, but also can be re-directed to the host and exported to the Console and VTY windows of the host, and recorded in cache, expanded FLASH and Syslog Server of the host.

Configuration Examples The following example enables the log re-direction function on a device:

```
Ruijie(config)#logging rd on
```

Related Commands

Command	Description
show logging count	Displays log information about modules of the system.
show logging	Displays basic configuration of log modules and log information in the buffer.

Platform Description N/A

15.19 logging rd rate-limit

Use this command in global configuration mode on the host to enable the log re-direction rate limiting function to limit the number of logs that can be re-directed from a slave or backup device to the host each second in the VSU environment. Use the **no** form of this command to disable this function.

logging rd rate-limit *number* [**except** [*severity*]]

no logging rd rate-limit

Parameter Description

Parameter	Description
number	Log information that can be re-directed each second, ranging from 1 to 10,000 logs
except	Log information on or lower than the severity level will not be limited; error (3) by default, log information on or lower than the error level is not limited.
severity	Log information severity level; lower the level is, higher the

	severity is, ranging from 0 to 7

Defaults The maximum number of logs that can be re-directed each second is 200 by default.

Command Mode Global configuration mode

Usage Guide This command is used to control the output of log information by system re-direction. You can use this command to prevent a slave or backup device from re-directing a large number of logs to the host.

Configuration Examples The following example sets the maximum number of logs (including debug) that can be re-directed from a slave device to the host each second at 10, excepting logs on and above the warning severity level:

```
Ruijie(config)#logging rd rate-limit 10 except warnings
```

Related Commands

Command	Description
show logging count	Displays log information about modules of the system.
show logging	Displays basic configuration of log modules and log information in the buffer.

Platform Description N/A

15.20 logging server

Use this command to send the logs to the specified Syslog Sever in global configuration mode. Use the **no** form of this command to remove the setting. Use the **default** form of this command to restore the default setting.

logging server [**oob**] { *hostname* |*ip-address* | **ipv6** *ipv6-address* } [**via** *mgmt-name*] [**udp-prot** *port*] [**vrf** *vrf-name*] [**facility** *facility-type*] [**level** *level*]

no logging server [**oob**] { *hostname* | *ip-address* [**vrf** *vrf-name*] | **ipv6** *ipv6-address* } [**via** *mgmt-name*]

no logging server { *hostname* | *ip-address* [**vrf** *vrf-name*] | **ipv6** *ipv6-address* } [**via** *mgmt-name*] **udp-prot**

Parameter Description

Parameter	Description
oob	Specifies out-of-band communication for the logging server. (logs are sent through the MGMT port to the logging server.)
hostname	Specifies the hostname of the host that receives log information.
ip-address	Specifies the IP address of the host that receives log information.
vrf-name	Specifies the VRF instance (VPN device forwarding table) connecting to the log host.
ipv6-address	Specifies IPV6 address for the host receiving the logs.

via *mgmt-name*	Specifies the MGMT port for the oob option.
udp-port *port*	Specifies the port number for the specified host (The default port number is 514).
facility *facility-type*	If the RFC5424 log format is disabled, the facility value of logs sent to the log server is local7 (23) by default. If the RFC5424 log format is enabled, the facility value of logs sent to the log server is local0 (16) by default.
level *level*	Level of the logs allowed to be received by the host (Default level: informational).

Defaults No log is sent to any syslog server by default.

Command Mode Global configuration mode

Usage Guide This command specifies a Syslog server to receive the logs of the device. Users are allowed to configure up to 5 Syslog Servers. The log information will be sent to all the configured Syslog Servers at the same time.

Only when the **oob** option is enabled can the **via** parameter be specified. Meanwhile, the **vrf** parameter cannot be set.

Configuration Examples The following example specifies a syslog server of the address 202.101.11.1:

```
Ruijie(config)# logging server 202.101.11.1
```

The following example specifies an ipv6 address as AAAA:BBBB:FFFF:

```
Ruijie(config)# logging server ipv6 AAAA:BBBB:FFFF
```

Related Commands

Command	Description
logging on	Turns on the log switch.
show logging	Displays log messages and related log configuration parameters in the buffer.
logging trap	Sets the level of logs allowed to be sent to Syslog server.

Platform Description N/A

15.21 logging source interface

Use this command to configure the source interface of logs in global configuration mode. Use the **no** form of this command to restore the default setting.

logging source [**interface**] *interface-type interface-number*

no logging source [**interface**]

Parameter

Parameter	Description

Description		
	interface-type	Interface type.
	interface-number	Interface number.

Defaults No source interface is configured by default.

Command Mode Global configuration mode

Usage Guide By default, the source address of the log messages sent to the syslog server is the address of the sending interface. For easy tracing and management, this command can be used to fix the source address of all log messages as an interface address, so that the administrator can identify which device is sending the message through the unique addresses. If the source interface is not configured on the device, or no IP address is configured for the source interface, the source address of the log messages is the address of the sending interface.

Configuration Examples The following example specifies loopback 0 as the source address of the syslog messages:

```
Ruijie(config)# logging source interface loopback 0
```

Related Commands	Command	Description
	logging server	Sends logs to the Syslog server.

Platform Description N/A

15.22 logging source ip | ipv6

Use this command to configure the source IP address of logs in global configuration mode. Use the **no** form of this command to restore the default setting.

logging source {**ip** *ip-address* | **ipv6** *ipv6-address*}

no logging source { **ip | ipv6** }

Parameter Description	Parameter	Description
	ip-address	Specifies the source IPV4 address sending the logs to IPV4 log server.
	ipv6-address	Specifies the source IPV6 address sending the logs to IPV6 log server.

Defaults No source address is configured by default.

Command Mode Global configuration mode

Usage Guide By default, the source address of the log messages sent to the syslog server is the address of the sending interface. For easy tracing and management, this command can be used to fix the source address of all log messages as an address, so that the administrator can identify which device is sending the message through the unique addresses. If this IP address is not configured on the device, the source address of the log messages is the address of the sending interface.

Configuration Examples The following example specifies 192.168.1.1 as the source address of the syslog messages:

```
Ruijie(config)# logging source ip 192.168.1.1
```

Related Commands

Command	Description
logging server	Sends the logs to the Syslog server.

Platform Description N/A

15.23 logging synchronous

Use this command to enable synchronization function between user input and log output in line configuration mode to prevent interruption when the user is keying in characters. Use the **no** form of this command to restore the default setting.

logging synchronous

no logging synchronous

Parameter Description

Parameter	Description
N/A	N/A

Defaults The synchronization function between user input and log output is disabled by default.

Command Mode Line configuration mode

Usage Guide This command enables synchronization function between user input and log output, preventing the user from interrupting when keying in the characters.

Configuration Examples

```
Ruijie(config)#line console 0
Ruijie(config-line)#logging synchronous
```

Print UP-DOWN logs on the port when keying in the command, the input command will be output again:

```
Ruijie# configure terminal
Oct  9 23:40:55 %LINK-5-CHANGED: Interface GigabitEthernet 0/1, changed state
to down
Oct  9 23:40:55 %LINEPROTO-5-UPDOWN: Line protocol on Interface
```

```
GigabitEthernet 0/1, changed state to DOWN
Ruijie# configure terminal//----the input command by the user is output again rather than being intererupted.
```

Related Commands	Command	Description
	show running-config	Displays the configuration.

Platform Description N/A

15.24 logging trap

Use this command to set the severity of logs that are allowed to be sent to the syslog server in global configuration mode. Use the **no** form of this command to prohibit sending log messages to the Syslog server.

logging trap [*level*]

no logging trap

Parameter Description	Parameter	Description
	level	Severity of the log message. The name of the severity or the numeral can be used. For the details of log severity, see Table 1.

Defaults The default is informational(6)

Command Mode Global configuration mode

Usage Guide To send logs to the Syslog Server, run the **logging** command in global configuration mode to configure the **Syslog Server**. Then, run the **logging trap** command to specify the severity level of logs to be sent.
If the device supports log level settings on the server, the sever settings will prevail.
The **show logging** command displays the configured related parameters and statistics of the log.

Configuration Examples The following example enables logs at severity 6 to be sent to the Syslog Server with the address of 202.101.11.22:

```
Ruijie(config)# logging 202.101.11.22
Ruijie(config)# logging trap informational
```

Related Commands	Command	Description
	logging on	Turns on the log switch.
	logging	Sends logs to the Syslog server.

show logging	Displays the log messages and related log configuration parameters in the buffer.

Platform Description N/A

15.25 logging userinfo

Use this command to enable the logging function to record user log/exit. Use the **no** form of this command to restore the default setting.

logging userinfo

no logging userinfo

Parameter Description

Parameter	Description
N/A	N/A

Defaults No log message is printed recording user log/exit by default.

Command Mode Global configuration mode

Usage Guide This command is used to print the log message to remind the administrator of user login. The log message is in the format as follows:

```
Mar 22 14:05:45 %LOGIN-5-LOGIN_SUCCESS: User login from vty0 (192.168.23.68) OK.
```

Configuration Examples The following example enables the logging function to record user log/exit.

```
Ruijie(config)# logging user-info
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

15.26 logging userinfo command-log

Use this command to enable the logging function to record user operation. Use the **no** form of this command to restore the default setting.

logging userinfo command-log

no logging userinfo command-log

Parameter Description

Parameter	Description
N/A	N/A

Defaults No log message is printed recording user operation by default.

Command Mode Global configuration mode

Usage Guide This command is used to print the log message to remind the administrator of configuration change. The log message is in the format as follows:

```
Mar 22 14:10:40 %CLI-5-EXEC_CMD: Configured from vty0 (192.168.23.68)
command-log: logging server 192.168.23.68.
```

Configuration Examples The following example enables the logging function to record user operation.

```
Ruijie(config)# logging user-info command-log
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

15.27 service private-syslog

Use this command to set the syslog format to the private syslog format. Use the **no** form of this command to restore the default setting.

service private-syslog

no service private-syslog

Parameter Description

Parameter	Description
N/A	N/A

Defaults The syslog is displayed in the default format.

Command Mode Global configuration mode

Usage Guide By default, the syslog is displayed in the format as follows:

*timestamp: %facility-severity-mnemonic: description

Here is an example:

```
*May 31 23:25:21: %SYS-5-CONFIG_I: Configured from console by console
```

With this function enabled, the syslog is displayed in the format as follows:

timestamp facility-severity-mnemonic: description

Here is an example:

```
May 31 23:31:28 SYS-5-CONFIG_I: Configured from console by console
```

The difference between the private syslog format and the default syslog format lies in the following marks:

The private syslog does not have "*" before the timestamp, ":" after the timestamp and "%" before the identifying string.

Configuration Examples The following example sets the private syslog format.

```
Ruijie(config)# service private-syslog
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

15.28 service sequence-numbers

Use this command to attach serial numbers into the logs in global configuration mode. Use the **no** form of this command to restore the default setting.

service sequence-numbers

no service sequence-numbers

Parameter Description

Parameter	Description
N/A	N/A

Defaults No serial number is contained in the logs by default.

Command Mode Global configuration mode

Usage Guide In addition to the timestamp, you can add serial numbers to the logs, numbering from 1. Then, it is clearly known whether the logs are lost or not and their sequence.

Configuration Examples The following example adds serial numbers to the logs.

```
Ruijie(config)# service sequence-numbers
```

Related

Command	Description

Commands		
	logging on	Turns on the log switch.
	service timestamps	Attaches timestamps to the logs.

Platform Description N/A

15.29 service standard-syslog

Use this command to set the syslog format to the standard syslog format defined in RFC3164. Use the **no** form of this command to restore the default setting.

service standard-syslog

no service standard-syslog

Parameter Description

Parameter	Description
N/A	N/A

Defaults The syslog is displayed in the default format.

Command Mode Global configuration mode

Usage Guide By default, the syslog is displayed in the format as follows:

*timestamp: %facility-severity-mnemonic: description

Here is an example:

```
*May 31 23:25:21: %SYS-5-CONFIG_I: Configured from console by console
```

With this function enabled, the syslog is displayed in the format as follows:

timestamp %facility-severity-mnemonic: description

Here is an example:

```
May 31 23:31:28 %SYS-5-CONFIG_I: Configured from console by console
```

The difference between the standard syslog format and the default syslog format lies in the following marks:

The standard syslog does not have “*” before the timestamp and “:” after the timestamp.

Configuration Examples The following example sets the standard syslog format.

```
Ruijie(config)# service standard-syslog
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

15.30 service sysname

Use this command to attach system name to logs in global configuration mode. Use the **no** form of this command to restore the default setting.

service sysname

no service sysname

Parameter Description

Parameter	Description
N/A	N/A

Defaults No system name is attached to logs by default.

Command Mode Global configuration mode

Usage Guide This command allows you to decide whether to add system name in the log information.

Configuration Examples The following example adds a system name in the log information:

```
Mar 22 15:28:02 %SYS-5-CONFIG: Configured from console by console
Ruijie #config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie (config)#service sysname
Ruijie (config)#end
Ruijie #
```

Mar 22 15:35:57 S3250 %SYS-5-CONFIG: Configured from console by console

Related Commands

Command	Function
show logging	Displays basic configuration of log modules and log information in the buffer.

Platform Description N/A

15.31 service timestamps

Use this command to attach timestamp into logs in global configuration mode. Use the **no** form of this command to remove the timestamp from the logs. Use the **default** form of this command to restore the default setting.

service timestamps [*message-type* [**uptime | datetime** [**msec** | **year**]]]

no service timestamps [*message-type*]

default service timestamps [*message-type*]

Parameter Description

Parameter	Description
message-type	The log type, including **Log** and **Debug**. The **log** type indicates the log information with severity levels of 0 to 6. The **debug** type indicates that with severity level 7.
uptime	Device start time in the format of *Day*Hour*Minute*Second, for example, 07:00:10:41.
datetime	Current time of the device in the format of Month*Date*Hour*Minute*Second, for example, Jul 27 16:53:07.
msec	Current time of the device in the format of Month*Date*Hour*Minute*Second*milisecond, for example, Jul 27 16:53:07.299
year	Current time of the device in the format of Year*Month*Date*Hour*Minute*Second, for example, 2007 Jul 27 16:53:07

Defaults The time stamp in the log information is the current time of the device. If the device has no RTC, the time stamp is automatically set to the device start time.

Command Mode Global configuration mode

Usage Guide When the **uptime** option is used, the time format is the running period from the last start of the device to the present time, in seconds. When the **datetime** option is used, the time format is the date of the current device, in the format of YY-MM-DD, HH:MM:SS.

Configuration Examples The following example enables the timestamp for **log** and **debug** information, in format of Datetime, supporting milisecond display.

```
Ruijie(config)# service timestamps debug datetime msec
Ruijie(config)# service timestamps log datetime msec
Ruijie(config)# end
Ruijie(config)# Oct 8 23:04:58.301 %SYS-5-CONFIG_I: configured from console
by console
```

Related Commands

Command	Description
logging on	Turns on the log switch.
service sequence-numbers	Enables serial numbers of logs.

Platform Description N/A

15. 32 show logging

Use this command to display configured parameters and statistics of logs and log messages in the memory buffer at privileged user layer. The log messages are sorted by the timestamp from before to now.

show logging

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following command displays the result of the **show logging** command with RFC5424 format disabled.

```
Ruijie# show logging
Syslog logging: enabled
  Console logging: level debugging, 15495 messages logged
  Monitor logging: level debugging, 0 messages logged
  Buffer logging: level debugging, 15496 messages logged
  Standard format: false
  Timestamp debug messages: datetime
  Timestamp log messages: datetime
  Sequence-number log messages: enable
  Sysname log messages: enable
  Count log messages: enable
  Trap logging: level informational, 15242 message lines logged,0 fail
    logging to  202.101.11.22
    logging to  192.168.200.112
Log Buffer (Total 131072 Bytes): have written 1336,
015487: *Sep 19 02:46:13: Ruijie %LINK-3-UPDOWN: Interface FastEthernet 0/24,
changed state to up.
015488: *Sep 19 02:46:13: Ruijie %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet 0/24, changed state to up.
015489: *Sep 19 02:46:26: Ruijie %LINK-3-UPDOWN: Interface FastEthernet 0/24,
changed state to down.
015490: *Sep 19 02:46:26: Ruijie %LINEPROTON/A5N/AUPDOWN: Line protocol on
Interface FastEthernet 0/24, changed state to down.
```

```
015491: *Sep 19 02:46:28: Ruijie %LINKN/A3N/AUPDOWN: Interface FastEthernet
0/24, changed state to up.
015492: *Sep 19 02:46:28: Ruijie %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet 0/24, changed state to up.
```

Log information description:

Field	Description
Syslog logging	Logging flag: enabled or disabled
Console logging	Level of the logs printed on the console, and statistics
Monitor logging	Level of the logs printed on the VTY window, and statistics
Buffer logging	Level of the logs recorded in the memory buffer, and statistics.
Standard format	Standard log format.
Timestamp debug messages	Timestamp format of the Debug messages
Timestamp log messages	Timestamp format of the Log messages
Sequence-number log messages	Serial number switch
Sequence log messages	Attaches system names to the logs.
Count log messages	Log statistics function
Trap logging	Level of the logs sent to the syslog server, and statistics
Log Buffer	Log files recorded in the memory buffer

The following example displays the result of the **show logging** command with RFC5424 format enabled.

```
Ruijie# show logging
Syslog logging: enabled
  Console logging: level debugging, 4740 messages logged
  Monitor logging: level debugging, 0 messages logged
  Buffer logging: level debugging, 4745 messages logged
  Statistic log messages: disable
  Statistic log messages to terminal: disable
  Delay-send file name:syslog_ftp_server, Current write index:3, Current send
index:3, Cycle:10 seconds
   Count log messages: enable
  Trap logging: level informational, 2641 message lines logged,4155 fail
    logging to  192.168.23.89
    logging to  2000::1
  Delay-send logging: 2641 message lines logged
```

```
   logging to  192.168.23.89  by tftp
Log Buffer (Total 4096 Bytes): have written 4096, Overwritten 3292
<135>1 2013-07-24T12:19:33.130290Z ruijie - 7 - - Please config the IP address
for capwap.
<132>1 2013-07-24T12:20:02.80313Z ruijie CAPWAP 4 NO_IP_ADDR - No ip address
for capwap.
<135>1 2013-07-24T12:20:02.80343Z ruijie - 7 - - Please config the IP address
for capwap.
<132>1 2013-07-24T12:20:32.250265Z ruijie CAPWAP 4 NO_IP_ADDR - No ip address
for capwap.
<134>1 2013-07-24T12:29:33.410123Z ruijie SYS 6 SHELL_LOGIN [USER@4881
name="" type="" from="console"] user login success.
<134>1 2013-07-24T12:29:34.343763Z ruijie SYS 6 SHELL_CMD
[USER@4881 name=""][CMD@4881 task="rl_con" cmd="enable"]
```

Field	Description
Syslog logging	Logging flag: enabled or disabled
Console logging	Level of the logs printed on the console, and statistics
Monitor logging	Level of the logs printed on the VTY window, and statistics
Buffer logging	Level of the logs recorded in the memory buffer, and statistics.
Count log messages	Log statistics function
Statistic log messages	Enables/disables log sending periodically
Statistic log messages to terminal	Enables/ disables log sending to console and remote terminal
Delay-send file name	Local filename of log delay-sending cache, index of write file and delay interval
Trap logging	Level of the logs sent to the syslog server and statistics
Delay-send logging	The server address, log sending mode and statistics
Log Buffer	Log files recorded in the memory buffer

Related Commands

Command	Function
logging on	Turns on the log switch.
clear logging	Clears the log messages in the buffer.

Platform Description N/A

15.33 show logging config

Use this command to display log configuration and statistics.

show logging config

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the outcome of running the **show logging config** command with RFC5424 disabled.

```
Ruijie# show logging config
Syslog logging: enabled
  Console logging: level debugging, 15495 messages logged
  Monitor logging: level debugging, 0 messages logged
  Buffer logging: level debugging, 15496 messages logged
  Standard format: false
  Timestamp debug messages: datetime
  Timestamp log messages: datetime
  Sequence-number log messages: enable
  Sysname log messages: enable
  Count log messages: enable
  Trap logging: level informational, 15242 message lines logged,0 fail
    logging to  202.101.11.22
    logging to  192.168.200.112
```

Field	Description
Syslog logging	Whether the logging function is enabled or disabled.
Console logging	The level and statistics of the log message printed on the console.
Monitor logging	The level and statistics of the log message printed on the VTY window.
Buffer logging	The level and statistics of the log message recorded in the memory buffer.
Standard format	Standard log format.
Timestamp debug messages	Timestamp format of debugging message.
Timestamp log messages	Timestamp format of log message.
Sequence-number log messages	Whether the sequence number function is enabled or disabled.
Sysname log messages	Adds the system name to the log message.
Count log messages	Log-counting function
Trap logging	The level and statistics of the log message sent to the syslog server.

The following example displays the outcome of running the **show logging config** command with RFC5424 enabled.

```
Ruijie# show logging
Syslog logging: enabled
  Console logging: level debugging, 4740 messages logged
  Monitor logging: level debugging, 0 messages logged
  Buffer logging: level debugging, 4745 messages logged
  Statistic log messages: disable
  Statistic log messages to terminal: disable
  Delay-send file name:syslog_ftp_server, Current write index:3, Current send
index:3, Cycle:10 seconds
   Count log messages: enable
  Trap logging: level informational, 2641 message lines logged,4155 fail
    logging to  192.168.23.89
    logging to  2000::1
  Delay-send logging: 2641 message lines logged
     logging to  192.168.23.89  by tftp
```

Field	Description
Syslog logging	Logging flag: enabled or disabled
Console logging	Level of the logs printed on the console, and statistics
Monitor logging	Level of the logs printed on the VTY window, and statistics
Buffer logging	Level of the logs recorded in the memory buffer, and statistics.
Count log messages	Log statistics function
Statistic log messages	Enables/disables log sending periodically
Statistic log messages to terminal	Enables/ disables log sending to output console and remove terminal
Delay-send file name	Local filename of log delay-sending cache, index of write file and delay interval
Trap logging	Level of the logs sent to the syslog server and statistics
Delay-send logging	The server address, log sending way and statistics

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

15.34 show logging count

Use this command to display the statistics about occurrence times, and the last occurrence time of each module log in the system in privileged mode.

show logging count

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide To use the log packet statistics function, run the **logging count** command in global configuration mode. The **show logging count** command can show the information of a specific log, occurrence times, and the last occurrence time.
You can use the **show logging** command to check whether the log statistics function is enabled.

Configuration Examples The following example displays the result of the **show logging count** command:

```
Ruijie# show logging count
Module Name   Message Name Sev Occur     Last Time
SYS          CONFIG_I        5   1        Jul 6 10:29:57
SYS TOTAL                        1
```

Related Commands

Command	Function
logging count	Enables the log statistics function.
show logging	Displays basic configuration of log modules and log information in the buffer.
clear logging	Clears the logs in the buffer.

Platform Description N/A

15.35 show logging reverse

Use this command to display configured parameters and statistics of logs and log messages in the memory buffer at privileged user layer. The log messages are sorted by the timestamp from now to before.

show logging reverse [timestamp *year day moth hh:mm:ss*]

Parameter

Parameter	Description

Description

year	Specifies the year.
moth	Specifies the month.
day	Specifies the day.
hh:mm:ss	Specifies the time

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide

Configuration Examples The following command displays the result of the **show logging reverse** command with RFC5424 format disabled.

```
Ruijie# show logging reverse
Syslog logging: enabled
  Console logging: level debugging, 15495 messages logged
  Monitor logging: level debugging, 0 messages logged
  Buffer logging: level debugging, 15496 messages logged
  Standard format: false
  Timestamp debug messages: datetime
  Timestamp log messages: datetime
  Sequence-number log messages: enable
  Sysname log messages: enable
  Count log messages: enable
  Trap logging: level informational, 15242 message lines logged,0 fail
    logging to  202.101.11.22
    logging to  192.168.200.112
Log Buffer (Total 131072 Bytes): have written 1336,
015492: *Sep 19 02:46:28: Ruijie %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet 0/24, changed state to up.
015491: *Sep 19 02:46:28: Ruijie %LINK-3-UPDOWN: Interface FastEthernet 0/24,
changed state to up.
015490: *Sep 19 02:46:26: Ruijie %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet 0/24, changed state to down.
015489: *Sep 19 02:46:26: Ruijie %LINK-3-UPDOWN: Interface FastEthernet 0/24,
changed state to down.
015488: *Sep 19 02:46:13: Ruijie %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet 0/24, changed state to up.
015487: *Sep 19 02:46:13: Ruijie %LINK-3-UPDOWN: Interface FastEthernet 0/24,
changed state to up.
```

Field	Description

Syslog logging	Logging flag: enabled or disabled
Console logging	Level of the logs printed on the console, and statistics
Monitor logging	Level of the logs printed on the VTY window, and statistics
Buffer logging	Level of the logs recorded in the memory buffer, and statistics.
Standard format	Standard log format.
Timestamp debug messages	Timestamp format of the Debug messages
Timestamp log messages	Timestamp format of the Log messages
Sequence-number log messages	Serial number switch
Sequence log messages	Attaches system names to the logs.
Count log messages	Log statistics function
Trap logging	Level of the logs sent to the syslog server, and statistics
Log Buffer	Log files recorded in the memory buffer

The following example displays the result of the **show logging reverse** command with RFC5424 format enabled.

```
Ruijie# show logging reverse
Syslog logging: enabled
  Console logging: level debugging, 4740 messages logged
  Monitor logging: level debugging, 0 messages logged
  Buffer logging: level debugging, 4745 messages logged
  Statistic log messages: disable
  Statistic log messages to terminal: disable
  Delay-send file name:syslog_ftp_server, Current write index:3, Current send
index:3, Cycle:10 seconds
   Count log messages: enable
  Trap logging: level informational, 2641 message lines logged,4155 fail
    logging to  192.168.23.89
    logging to  2000::1
  Delay-send logging: 2641 message lines logged
    logging to  192.168.23.89  by tftp
Log Buffer (Total 4096 Bytes): have written 4096, Overwritten 3292
<134>1 2013-07-24T12:29:34.343763Z ruijie SYS 6 SHELL_CMD [USER@4881
name=""][CMD@4881 task="rl_con" cmd="enable"]
<134>1 2013-07-24T12:29:33.410123Z ruijie SYS 6 SHELL_LOGIN [USER@4881 name=""
type="" from="console"] user login success.
<132>1 2013-07-24T12:20:32.250265Z ruijie CAPWAP 4 NO_IP_ADDR - No ip address
```

```
for capwap.
<135>1 2013-07-24T12:20:02.80343Z ruijie - 7 - - Please config the IP address
for capwap.
<132>1 2013-07-24T12:20:02.80313Z ruijie CAPWAP 4 NO_IP_ADDR - No ip address
for capwap.
<135>1 2013-07-24T12:19:33.130290Z ruijie - 7 - - Please config the
IP address for capwap.
```

Field	Description
Syslog logging	Logging flag: enabled or disabled
Console logging	Level of the logs printed on the console, and statistics
Monitor logging	Level of the logs printed on the VTY window, and statistics
Buffer logging	Level of the logs recorded in the memory buffer, and statistics.
Count log messages	Log statistics function
Statistic log messages	Enables/disables log sending periodically
Statistic log messages to terminal	Enables/ disables log sending to console and remote terminal
Delay-send file name	Local filename of log delay-sending cache, index of write file and delay interval
Trap logging	Level of the logs sent to the syslog server and statistics
Delay-send logging	The server address, log sending mode and statistics
Log Buffer	Log files recorded in the memory buffer

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

15.36 show logging last

Use this command to show last N logs. Use the **no** form of this command to restore the default setting.

show logging last *numbers*

Parameter Description

Parameter	Description
numbers	Specifies the number of logs to be displayed.

Defaults N/A

Command Mode	Privileged EXEC mode
Usage Guide	N/A
Configuration Examples	The following example allows log information to be printed on the current VTY window:

```
Ruijie# show logging last 3
Syslog logging: enabled
  Console logging: level debugging, 15495 messages logged
  Monitor logging: level debugging, 0 messages logged
  Buffer logging: level debugging, 15496 messages logged
  Standard format: false
  Timestamp debug messages: datetime
  Timestamp log messages: datetime
  Sequence-number log messages: disable
  Sysname log messages: disable
  Count log messages: disable
  Trap logging: level informational, 15242 message lines logged,0 fail
    logging to  202.101.11.22
    logging to  192.168.200.112
Log Buffer (Total 131072 Bytes): have written 124,
*Oct 13 07:09:10: %CLI-6-STARTUP: Cli server process startup.
*Oct 13 07:09:10: %LOCAL_DP-5-LC_PROB: Board information in this chassis has been collected.
*Oct 13 07:09:10: %DP-6-MASTER: Module in slot 0 has translated to master.
```

Related Commands	**Command**	**Description**
	N/A	N/A

Platform Description	N/A

Command History	**Version**	**Description**
	N/A	N/A

15.37 terminal monitor

Use this command to show logs on the current VTY window. Use the **no** form of this command to restore the default setting.

terminal monitor

terminal no monitor

Parameter Description

Parameter	Description
N/A	N/A

Defaults

Log information is not allowed to be displayed on the VTY window by default.

Command Mode

Privileged EXEC mode

Usage Guide

This command only sets the temporary attributes of the current VTY. As the temporary attribute, it is not stored permanently. At the end of the VTY terminal session, the system will use the default setting, and the temporary setting is invalid. This command can be also executed on the console, but it does not take effect.

Configuration Examples

The following example allows log information to be printed on the current VTY window:

```
Ruijie# terminal monitor
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

Command History

Version	Description
N/A	N/A

16 MONITOR Commands

16.1 show power

Use this command to display power information including model, status, hardware version and SN. .

show power

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode

Level 14

Usage Guide This command is used to display power information:

Configuration Examples The following example displays the basic power information.

```
Ruijie#show power
Name              Slot Status       Attribute Conexist Hardware Version Serial
Temperature Exception
----------------- ---- ------------ --------- -------- ---------------- --------------------
----------- --------------------
N/A               1    no-present   N/A       N/A      N/A              N/A
N/A         N/A
RG-PA550I-F       2    ok           -F        yes      AA               M623TW004LAAL
35          N/A
                        Rated     Input      Input       Output     Output     Output
Name              Slot Power(W) Voltage(V) Current(mA) Voltage(V) Current(mA) Power(W)
----------------- ---- -------- ---------- ---------- ---------- ---------- --------
N/A               1    N/A      N/A        N/A        N/A        N/A        N/A
RG-PA550I-F       2    550      232        634        12         8484       101
```

Prompt Messages N/A

Platforms N/A

16.2 show fan

Use this command to display the fan information in the slave chassis including the model number, serial number, operating status of every fan as well as the actual rotating speed and other information.

show fan [*speed*]

show fan [*attribute*]

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode

Level 14

Usage Guide Use the **show fan** command to display the fan information, including work status and rotating speed. .

Configuration Examples The following example displays the fan information..

```
Ruijie#show fan
Fan id Type             Status     Hardware Version Serial Number
------ ---------------- ---------- ---------------- ---------------
1      M6510-FAN-F      ok         1.01             1234567890128
2      M6510-FAN-F      ok         1.01             1234567890126
3      M6510-FAN-F      ok         1.02             2000000000022
4      M6510-FAN-F      ok         1.01             1234567890125The following example
displays the fan rotating speed and level. uijie#show fan speed
Fan id Type             Status     Speed(R/m) Speed level
------ ---------------- ---------- ---------- -----------
1      M6510-FAN-F      ok         12406      123
2      M6510-FAN-F      ok         12479      123
3      M6510-FAN-F      ok         12305      123
4      M6510-FAN-F      ok         12135      123
```

The following example displays the fan status and air channel.

```
Ruijie#show fan attribute
Fan id Type             Status     Attribute Coexistr
------ ---------------- ---------- --------- --------
1      M6510-FAN-F      ok         -F        yes
2      M6510-FAN-F      ok         -F        yes
3      M6510-FAN-F      ok         -F        yes
4      M6510-FAN-F      ok         -F        yes
```

Prompt N/A

Messages

Platforms N/A

16.3 show temperature

Use this command to display board temperature, threshold configuration and other information.

show temperature

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode

Level 14

Usage Guide Use the command to display the current temperature of air inlet, air outlet, CPU, MAC and expansion module..

Configuration Examples The following example displays the temperature.

```
Ruijie#show temperature
Slot    Card_type                       Temperature name        Current(C) Status
------- ------------------------------- ----------------------- ---------- ------
0       RG-S6510-48VS8CQ-X              air_outlet              31         OK
                                        air_inlet               29         OK
                                        board                   39         OK
                                        cpu                     52         OK
                                        switch                   47          OK
```

Prompt Messages N/A

Platforms N/A

17 PKG_MGMT Commands

17.1 patch active

Use this command to activate a patch to take effect.

patch active[**slot** {*num* **| M1 | M2 | all** }]

Parameter Description

Parameter	Description
slot *num*	This parameter is used on a chassis device. It indicates a corresponding line card based on the slot number.
slot all	This parameter is used on a chassis device. It indicates all devices.
slot M1	This parameter is used on a chassis device. It specifies that the operation is performed onsupervisor module M1.
slot M2	This parameter is used on a chassis device. It specifies that the operation is performed on supervisor module M2.

Defaults N/A

Command Mode Privileged EXEC mode

Default Level 2

Usage Guide Activating operation can be performed only on the device already installed with a patch, after which the patch really takes effect. This command can be used to activate a hot patch temporarily. The activated patch becomes invalid after device restart.

Configuration Examples The following example activates a patch on the box device.

```
Ruijie#patch active
 Active the patch package success
```

The following example activates a patch on the chassis device.

```
Ruijie#patch active slot 8
[Slot 8]:
 Active the patch package success
```

Verification Use the **show patch** command to display patch information.

Prompt Messages The patch is activated successfully.

```
Active the patch package success
```

The running fails and a patch package needs to be installed at first.

```
Patch not installed
```

There is no need to run the command for the patch in the activated or running status.

```
The patch status is already active or running
```

Contact the service center to solve the package problem.

```
Cannot find the package's scripts file
```

Common Errors

There is no hot patch installed on current device.

The hot patch on current device is already activated.

Platforms

N/A

17.2 patch deactive

Use this command to deactivate a patch.

patch deactive [**slot** {*num* **| M1 | M2 | all** }]

Parameter Description

Parameter	Description
slot *num*	This parameter is used on a chassis device. It indicates a corresponding line card based on the slot number.
slot all	This parameter is used on a chassis device. It indicates all devices.
slot M1	This parameter is used on a chassis device. It specifies that the operation is performed on supervisor module M1.
slot M2	This parameter is used on a chassis device. It specifies that the operation is performed on supervisor module M2.

Command Mode

Privileged EXEC mode

Default Level

2

Usage Guide

This commandcan be performed to deactivate a patch only after the patch is in the activated status.

Configuration Examples

The following example deactivates a patch on the box device.

```
Ruijie#patch deactive
 Deactive the patch package success
```

The following example deactivates a patch on the chassis device.

```
Ruijie#patch deactive slot 8
 [Slot 8]:
```

```
Deactive the patch package success
```

Verification Use the **show patch** command to display patch information.

Prompt Messages The patch is deactivated successfully.

```
Deactive the patch package success
```

The running fails and a patch package needs to be installed at first.

```
Patch not installed
```

There is no need to run the command for the patch in the deactivated status.

```
The patch is not in active or running status
```

Contact the service center to solve the package problem.

```
Cannot find the package's scripts file
```

Common Errors There is no hot patch installed on current device.
The hot patch on current device is already invalid.

17.3 patch delete

Use this command to uninstall a patch.

patch delete[**slot** {*num* **| M1 | M2 | all** }]

Parameter Description

Parameter	Description
slot *num*	This parameter is used on a chassis device. It indicates a corresponding line card based on the slot number.
slot all	This parameter is used on a chassis device. It indicates all devices.
slot M1	This parameter is used on a chassis device. It specifies that the operation is performed on supervisor module M1.
slot M2	This parameter is used on a chassis device. It specifies that the operation is performed on supervisor module M2.

Command Mode Privileged EXEC mode

Default Level 2

Usage Guide This command is used to remove the existing hot patch package on the device.

Configuration The following example removes the installed hot patch package from the box device.

Examples

```
Ruijie# patch delete
Clear the patch patch_bridge success
Clear the patch success
```

The following example removes the installed hot patch package from the chassis device.

```
Ruijie# patch delete slot M1
[Slot M1]:
Clear the patch patch_bridge success
Clear the patch success
```

Verification Use the **show patch** command to display patch status.

Prompt Messages

The patch is uninstalled successfully.

```
Clear the patch success
```

A hot patch package should be installed at first for it has not been installed.

```
Patch not installed
```

Common Errors There is no hot patch installed on current device.

17.4 patch running

Use this command to activate a patch permanently.

patch running[**slot** {*num* **| M1 | M2 | all** }]

Parameter Description

Parameter	Description
slot *num*	This parameter is used on a chassis device. It indicates a corresponding line card based on the slot number.
slot all	This parameter is used on a chassis device. It indicates all devices.
slot M1	This parameter is used on a chassis device. It specifies that the operation is performed on supervisor module M1.
slot M2	This parameter is used on a chassis device. It specifies that the operation is performed on supervisor module M2.

Command Mode Privileged EXEC mode

Default Level 2

Usage Guide Activating operation can be performed only on the device already installed with a patch, after which

the patch really takes effect. This command can be used to activate a hot patch permanently.

Configuration Examples The following example activates a patch on the box device.

```
Ruijie#patch running
The patch on the system now is in running status
```

The following example activates a patch on the chassis device.

```
Ruijie#patch running slot M1
[Slot M1]:
The patch on the system now is in running status
```

Verification Use the **show patch** command to display the patch information.

Prompt Messages The patch is activated permanently.

```
The patch on the system now is in running status
```

The running fails and a patch package needs to be installed at first.

```
Patch not installed
```

There is no need to run the command for the patch is in the deactivated status.

```
The patch is not in active or running status
```

Contact the service center to solve the package problem.

```
Cannot find the package's scripts file
```

Common Errors There is no hot patch on current device.

The hot patch is already activated on current device.

17.5 show component

Use this command todisplay all components already installed on current device and their information.

show component [**slot** {*num* **| M1 | M2 | all** }][*component _name*]

Parameter Description

Parameter	Description
slot *num*	This parameter is used on a chassis device. It indicates a corresponding line card based on the slot number.
slot all	This parameter is used on a chassis device. It indicates all devices.
slot M1	This parameter is used on a chassis device. It specifies that the operation is performed onsupervisor module M1.
slot M2	This parameter is used on a chassis device. It specifies that the operation is performed on supervisor module M2.
component _name	Name of the components

	When this parameter value is N/A, the command is used to display all components already installed on the device and basic information of these components. When this parameter value is not N/A, the command is used to display detailed information of the corresponding component, check whether the component is intact, and check whether this component works properly.

Command Mode Privileged EXEC mode

Default Level 2

Usage Guide This command includes one with *component_name* and one without *component_name*. During upgrade, it requires users to understand all components installed on current device and their version information before components deletion. This needs to use the **show component** command without *component_name*. The **show component** command with *component_name* is used to obtain details of the corresponding component. The detailed information enables users to easily realize components' operation and damage. It is significant to insure their troubleshooting, security and reliability.

Some components in use will change their defaults files. Though this is more possibly normal than malicious, the show component command is used only to judge whether component files change in use. It is unable to distinguish natural damage from malicious one. It depends on users to make a further judgment.

Configuration Examples The following example displays all components already installed on the box device and their information.

```
Ruijie# show component
Package :sysmonit
    Version:1.0.1.23cd34aa     Build time: Wed Dec  7 00:58:56 2013
    Size:12877  Install time :Wed  Mar 5 14:23:12 2012
    Description: this is a system monit package
    Required packages: None
------------------------------------------------------------------
Package:bridge
    Version:2.0.1.37cd5cda     Build time: Wed Dec  7 00:54:56 2013
    Size:23245  Install time :Wed  Mar 5 14:30:12 2012
    Description: this is a bridge package
    Required packages: None
------------------------------------------------------------------
```

This command is used to obtain all components already installed on the device and theirbasic information. The information offers a basis for users to decide whether to upgrade or delete components.

Field	Description

Package	Name of the component
Version	Version number of the component
Build time	Compilation time of the component on the server
Size	Content size of the component
Install time	Installation time of the component
Description	Simple functional description of the component
Required packages	Name of required packages

The following example displays the information of all feature components already installed on the chassis device.

```
Ruijie#show component slot 8
Ruijie#*
[Slot 8]:
Package : utils-system
    Version: 1.0.0.433ef8d       Build time: Sun May 19 19:22:54 2013
    Size: 823936   Install time: Sun May 19 19:27:04 2013
    Description: utils system compile
    Required packages: None
----------------------------------
Package : tcl-expect
    Version: 1.0.0.433ef8d       Build time: Sun May 19 19:19:18 2013
    Size: 3474153        Install time: Sun May 19 19:27:04 2013
    Description: tcl & expect packages
    Required packages: None
----------------------------------
```

The following example displays the information of specified components already installed on the box device.

```
Ruijie# show componentbridge
package:bridge
    Version: 2.3.1.1252ea      Build time: Wed Dec  7 00:54:56 2013
    Size:26945  Install time : Wed  Mar 19:23:15 2012
    Description:this is a bridge package
    Required packages: None
    Package files:
       /lib64
       /lib64/libbridge.so
       /sbin
    /sbin/bridge

   Package file validate: [OK]
   Required relationship verify: [OK]
```

The other information except the basic information of components is listed as follows.

Field	Description
Package file validate	Checks whether the component filesare intact. “OK” is displayed when all component files work properly; “ERR” is displayed together with their names when some component files are lost or revised.
Required package	Lists all required packages of the component. “OK” is labeled if required components are already installed; “ERR” is labeled if not together with detailed description about their names and versions.
Package files	Lists all files contained in the package.

Prompt Messages The execution is successful with all components information displayed.

```
Package :sysmonit
    Version:1.0.1.23cd34aa     Build time: Wed Dec  7 00:58:56 2013
    Size:12877  Install time :Wed   Mar 5 14:23:12 2012
    Description: this is a system monit package
    Required packages: None
------------------------------------------------------------------------
Package:bridge
    Version:2.0.1.37cd5cda     Build time: Wed Dec  7 00:54:56 2013
    Size:23245  Install time :Wed   Mar 5 14:30:12 2012
    Description: this is a bridge package
    Required packages: None
------------------------------------------------------------------------
```

17.6 show patch

Use this command to display the information of a hot patch package already installed on the device.

show patch [**history**] [**slot** {*num* **| M1 | M2 | all** }] [*patch _name*] [**brief**]

Parameter Description

Parameter	Description
history	This parameter is used to display all patches.
slot *num*	This parameter is used on a chassis device. It indicates a corresponding line card based on the slot number.
slot all	This parameter is used on a chassis device. It indicates all devices.
slot M1	This parameter is used on a chassis device. It specifies that the operation is performed on supervisor module M1.
slot M2	This parameter is used on a chassis device. It specifies that the

	operation is performed on supervisor module M2.
patch _name	Name of the patches When this parameter value is N/A, the command is used to display all components already installed on the device and basic information of these components. When this parameter value is not N/A, the command is used to display detailed information of the corresponding component, check whether the component is intact, and check whether this component works properly.
brief	This parameter is used to display the brief information about installed patches.

Command Mode Privileged EXEC mode

Default Level 2

Usage Guide This command is used to check all patches already installed on the device and their information.

Configuration Examples The following example displays patches already installed on the box device.

```
Ruijie# show patch
[Slot 0]:
Patch package SP2 installed in the system, version:pa
    Order       : 2
    ----------------------------------------
    Patch       : patch_utils
    Status      : installed
    Version     : 1.0.0.70a1a80
    Size        : 239273
    Build time  : Thu May  9 06:13:33 2019
    Install time: Fri May 10 11:21:31 2019
    Description : utils patch
```

This command is used to obtain the basic information of patches already installed on the device.

Field	Description
Order	Serial number
Package	Name of the patch
status	Status of the patch
Version	Version of the patch
Build time	Compilation time of the patch on the server
Size	Content size of the patch
Install time	Installation time of the patch
Description	Simple functional description of the patch

The following example displays the information of all patches installed on the chassis device.

```
Ruijie#show patch slot 1/8
[Slot 1/8]:
Patch package SP2 installed in the system, version:pa
    Order       : 2
    ----------------------------------------
    Patch       : patch_utils
    Status      : installed
    Version     : 1.0.0.70a1a80
    Size        : 239273
    Build time  : Thu May  9 06:13:33 2019
    Install time: Fri May 10 11:21:31 2019
    Description : utils patch
```

The following example displays the brief information about installed patches.

```
Ruijie#show patch slot 1/8 brief
[Slot 1/8]:
Patch package SP2 installed in the system, version:pa
    Order       : 2
    ----------------------------------------
    Patch       : patch_utils
    Status      : installed
```

The following example displays information about all installed patches.

```
Ruijie#show patch history slot 1/8
[Slot 1/8]:
Patch package SP2 installed in the system, version:pa
    Order       : 2
    ----------------------------------------
    Patch       : patch_utils
    Status      : installed
    Version     : 1.0.0.70a1a80
    Size        : 239273
    Build time  : Thu May  9 06:13:33 2019
    Install time: Fri May 10 11:21:31 2019
    Description : utils patch
Patch package SP1 installed in the system, version:pa
    Order       : 1
    ----------------------------------------
    Patch       : patch_utils
    Status      : installed
    Version     : 1.0.0.70a1a80
    Size        : 239273
    Build time  : Thu May  9 06:13:33 2019
    Install time: Fri May 9 11:21:31 2019
    Description : utils patch
```

The following example displays the information of particular patches

installed on the box device.

```
Ruijie# show componentbridge
package:bridge
    Version: 2.3.1.1252ea      Build time: Wed Dec  7 00:54:56 2011
    Size:26945  Install time : Wed  Mar 19:23:15 2012
    Description:this is a bridge package
    Required packages: None
    Package files:
       /lib64
       /lib64/libbridge.so
       /sbin
    /sbin/bridge

   Package file validate: [OK]
```

The other information except the basic information of the patch is listed as follows:

Field	Description
Package file validate	Checks whether the patch files are intact. “OK” is displayed when all patch files work properly; “ERR” is displayed together with their names when some files are lost or revised.
Package files	Lists all files contained in the patch package.

Prompt Messages The information of the patch is displayed after successful running.

```
Patch package patch_install installed in the system, version:pa1
Package : patch_bridge
 Status:running
 Version: pa1      Build time: Mon May 13 09:03:07 2013
Size: 277     Install time: Tue May 21 03:07:17 2013
    Description: a patch for bridge
    Required packages: None
```

17.7 show upgrade auto-sync

Use this command to display related auto-sync configuration on the device.

show upgrade auto-sync

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode

Default 2

Level

Usage Guide This command is used to display the auto-sync upgrade configuration in the system including the policy, range and upgrade package's path.

Prompt Messages The auto-sync information of the system is displayed after running.

```
Ruijie#show upgrade auto-sync
   auto-sync policy: coordinate
   auto-sync range:  vsu
   auto-sync package: flash:/eg1000m_main_1.0.0.0f328e91.bin
```

17.8 show upgrade file

Use this command to display the information of the installation package files in the device file system.

show upgrade file *url*

Parameter Description

Parameter	Description
url	The local *url* path indicates where an installation package file is stored.

Command Mode Privileged EXEC mode

Default Level 2

Usage Guide This command is used to preview main messages of an installation package after it is downloaded into local file system.

This command is not applied to a chassis package.

Configuration Examples The following example displays the information of an installation package file.

```
Ruijie# show upgrade file flash://bridge_eg1000m_2.3.1.1252ea-1.mips.rpm
Name    : bridge
Version:1.0.1.23cd34aa
Package type     : common component
Support target   : eg1000m
Size            : 26945
Build time       : Wed Dec  7 00:54:56 2013
Install date     : (not installed)
Description      : this is a bridge package
Package files :
    Package files:
       /lib64
```

```
      /lib64/libbridge.so
      /sbin
      /sbin/bridge
```

This command is used to obtain the information in the package.

Field	Description
Name	Name of the package
Version	Version of the package
Package type	Type of the package
Support target	Supported product description
Size	Content size of the package
Build time	Compilation time of the package
Install date	Installation time of the package
Description	Description of the package
Package files	All contents in the package

Prompt Messages The package information is displayed after running.

```
Name    : bridge
Version:1.0.1.23cd34aa
Package type     : common component
Support target   : eg1000m
Size            : 26945
Build time       : Wed Dec  7 00:54:56 2013
Install date     : (not installed)
Description      : this is a bridge package
Package files :
    Package files:
       /lib64
       /lib64/libbridge.so
       /sbin
  /sbin/bridge
```

17.9 show upgrade history

Use this command to display the upgrade history.

show upgrade history

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode

Default Level 2

Configuration Examples The following example displays the upgrade history.

```
Ruijie#show upgrade history
Last Upgrade Information:
   Time:        2014-08-31 12:15:03
   Method:      LOCAL
Package Name: N18000_RGOS11.0(1)B1_CM_01200616_install.bin
Package Type: Distribution
```

Prompt Messages N/A

Platforms N/A

17.10 show upgrade status

Use this command todisplay the upgrade status of all line cards on the chassis device.

show upgrade status

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode

Default Level 2

Configuration Examples The following example displays the upgrade status of all line cards on the chassis device.

```
Ruijie#show upgrade status
[slot: M1]
      dev_type: s12k-ppc-cm
      status  : ready
[slot: 8]
      dev_type: s12k-s86-ppc-lc
      status  : upgrading
```

Prompt Messages The upgrade status of various line cards is displayed.

```
 [slot: M1]
      dev_type: s12k-ppc-cm
      status  : ready
[slot: 8]
```

```
    dev_type: s12k-s86-ppc-lc
    status  : upgrading
```

Platforms This command is supported only on the chassis device.

17.11 upgrade

Use this command to install and upgrade an installation package in the local file system.
upgrade [**slot** {*num* **| M1 | M2 | all** }]*url*[**force**]

Parameter Description

Parameter	Description
url	The local path indicates where an installation package is stored. This command is used to upgrade an installation package on the device.
slot *num*	This parameter is used on a chassis device. It indicates a corresponding line card based on the slot number.
slot all	This parameter is used on a chassis device. It indicates all devices including VSU system.
slot M1	This parameter is used on a chassis device. It specifies that the operation is performed onsupervisor module M1.
slot M2	This parameter is used on a chassis device. It specifies that the operation is performed on supervisor module M2.
force	Mandatory upgrade

Command Mode Privileged EXEC mode

Default Level 2

Usage Guide This command is applicable to installation packages of all subsystem components, chassis devices, feature components and hot patches. Before its use, run the **copy** command to copy feature packages into the file system in the device.
When there is no specified range of parameters, the command is used to upgrade the matched system components according to the auto-sync configuration.

Configuration Examples The following example upgrades the main package on the device.

```
Ruijie#upgrade usb0:/eg1000m_main_1.0.0.0f328e91.bin
Upgrade processing is 10%
Upgrade processing is 60%
Upgrade processing is 90%
Upgrade info [OK]
Kernel version[2.6.32.91f9d21->2.6.32.9f8b56f]
Rootfs version[1.0.0.2ad02537->1.0.0.1bcc12e8]
```

```
Upgrade processing is 100%
Reload system to take effect!
```

The following example upgrades the chassis package on the device.

```
Ruijie# upgrade usb0:/ca-octeon_11.0(1B2)_20131106_main_install.bin
[Slot M1]:Upgrade processing is 10%

 [Slot 1]:Upgrade processing is 10%

 [Slot M1]:Upgrade processing is 60%

 [Slot 1]:Upgrade processing is 60%

 [Slot M1]:Upgrade processing is 90%

 [Slot M1]:
 Upgrade info [OK]
   Kernel version[2.6.32.abb2b41f170c81->2.6.32.abb2b415749f40]
   Rootfs version[1.0.0.d5f0de03->1.0.0.660e0085]

 [Slot M1]:Restart to take effect !

 [Slot M1]:Upgrade processing is 100%
 [Slot 1]:Upgrade processing is 90%

 [Slot 1]:
 Upgrade info [OK]
   Kernel version[2.6.32.9f8b56f1d45ab2 ->2.6.32.0f48cb9f170c81]
   Rootfs version[1.0.0.2ad02537->1.0.0.1bcc12e8]

 [Slot 1]:Restart to take effect !

 [Slot 1]:Upgrade processing is 100%
 [slot: M1]
   device_name: ca-octeon-cm
   status:     SUCCESS
 [slot: 1]
   device_name: ca-octeon-lc
Status:     SUCCESS
```

Verification Run the **show version detail** command to check whether the upgrade of a subsystem component is successful.

Run the **show component** command to check whether the upgrade of a feature component is successful. upgrading a feature component

Run the **show patch** command to check whether the upgrade of a hot patch is successful.

Prompt Messages

The prompt message of successful running is displayed.

```
Upgrade info [OK]
```

The installation package is invalid or damaged and needs to be regained for upgrade command.

```
Invalid package file
```

The installation package is not available on the device and needs to be regained for upgrade command.

```
Device don't support
```

There is no need to upgrade the device.

```
The version in device is newer or the same
```

When there is insufficient space for upgrade, check USB flash disk attached on the device.

```
No enough space for decompress
```

Contact the service center to solve the system problem.

```
No enough space,rootfs been destroyed. Please upgrade in uboot
```

The existing patch package needs to be uninstalled before upgrade.

```
Already exist patch, please uninstall before upgrade
```

The patch package is not applicable to this system and needs to be changed.

```
Patch compatibility err
```

The upgrade of a patch package is not available on this device and needs to be regained.

```
some origin cmpnt has change
```

17.12 upgrade auto

Use this command to upgrade an installation package automatically without interrupting services on a dual-device VSU system. While either in VSU mode or in standalone mode, one single device will restart after this configuration, thus interrupting services.

upgrade auto *url* [**force**]

Parameter Description

Parameter	Description
url	Installation package directory
force	Enforces upgrade.

Command Mode Privileged EXEC mode

Default Level 2

Usage Guide Use this command to upgrade the VSU system.
Download the program of the latest version to the device before running this command (by using the **copy tftp** command).
During one upgrade, do not use the **upgrade auto** command and other upgrade commands (such as the **upgrade** command) at the same time. If auto-upgrade fails, follow the system prompt to restore the version.
Do not update the installation package (by running the copy tftp command/U disk copy) or perform other upgrade operation (running the upgrade /upgrade auto command) repetitively.
During auto-upgrade, do not unplug the card, perform hot backup switchover, power off chassis or change VSU software/hardware configuration.

Configuration Examples The following example upgrades the main package automatically without interrupting the service.

```
2015-04-09_09-56-23 Ruijie#upgrade auto usb0:S6220_RGOS11.0(5)B1_install.bin
2015-04-09_09-56-24 Ruijie#*Jan  1 00:23:40: %7:
2015-04-09_09-56-24 *Jan  1 00:23:40: %7: [Slot 1/0]:Upgrade processing is 10%
2015-04-09_09-56-26 Ruijie#show upgrade status
2015-04-09_09-56-26 [Slot 1/0]
2015-04-09_09-56-26       dev_type: s6k
2015-04-09_09-56-26       status  : upgrading
2015-04-09_09-56-26 [Slot 2/0]
2015-04-09_09-56-26       dev_type: s6k
2015-04-09_09-56-26       status  : transmission
2015-04-09_09-58-20 *Jan  1 00:25:36: %7: [Slot 2/0]:Upgrade processing is 10%
2015-04-09_09-58-30 Ruijie#show upgrade status
2015-04-09_09-58-30 [Slot 1/0]
2015-04-09_09-58-30       dev_type: s6k
2015-04-09_09-58-30       status  : upgrading
2015-04-09_09-58-30 [Slot 2/0]
2015-04-09_09-58-30       dev_type: s6k
2015-04-09_09-58-30       status  : upgrading
2015-04-09_09-58-39 *Jan  1 00:25:56: %7:
2015-04-09_09-58-39 *Jan  1 00:25:56: %7: [Slot 2/0]:Upgrade processing is 60%
2015-04-09_09-59-19 *Jan  1 00:26:35: %7:
2015-04-09_09-59-19 *Jan  1 00:26:35: %7: [Slot 2/0]:Upgrade processing is 90%
2015-04-09_09-59-19 *Jan  1 00:26:35: %7:
2015-04-09_09-59-19 *Jan  1 00:26:35: %7: [Slot 2/0]:
2015-04-09_09-59-19 *Jan  1 00:26:35: %7: Upgrade info [OK]
2015-04-09_09-59-19 *Jan  1 00:26:36: %7:   Kernel
```

```
version[2.6.32.6b311610a8eb91->2.6.32.6b31161115502c]
2015-04-09_09-59-19 *Jan  1 00:26:36: %7:   Rootfs
version[1.0.0.eb75cd01->1.0.0.3d978b6c]
2015-04-09_09-59-19 *Jan  1 00:26:36: %7:
2015-04-09_09-59-19 *Jan  1 00:26:36: %7: [Slot 2/0]:Reload system to take
effect!
2015-04-09_09-59-21 *Jan  1 00:26:37: %7:
2015-04-09_09-59-21 *Jan  1 00:26:37: %7: [Slot 2/0]:Upgrade processing is 100%
2015-04-09_10-00-28 Ruijie#show upgrade status
2015-04-09_10-00-28 [Slot 1/0]
2015-04-09_10-00-28       dev_type: s6k
2015-04-09_10-00-28       status  : upgrading
2015-04-09_10-00-28 [Slot 2/0]
2015-04-09_10-00-28       dev_type: s6k
2015-04-09_10-00-28       status  : success
2015-04-09_10-01-39 *Jan  1 00:28:56: %7:
2015-04-09_10-01-39 *Jan  1 00:28:56: %7: [Slot 1/0]:Upgrade processing is 60%
2015-04-09_10-02-17 *Jan  1 00:29:33: %7:
2015-04-09_10-02-17 *Jan  1 00:29:33: %7: [Slot 1/0]:Upgrade processing is 90%
2015-04-09_10-02-17 *Jan  1 00:29:33: %7:
2015-04-09_10-02-17 *Jan  1 00:29:33: %7: [Slot 1/0]:
2015-04-09_10-02-17 *Jan  1 00:29:34: %7: Upgrade info [OK]
2015-04-09_10-02-17 *Jan  1 00:29:34: %7:   Kernel
version[2.6.32.6b311610a8eb91->2.6.32.6b31161115502c]
2015-04-09_10-02-17 *Jan  1 00:29:34: %7:   Rootfs
version[1.0.0.eb75cd01->1.0.0.3d978b6c]
2015-04-09_10-02-17 *Jan  1 00:29:34: %7:
2015-04-09_10-02-18 *Jan  1 00:29:34: %7: [Slot 1/0]:Reload system to take
effect!
2015-04-09_10-02-19 *Jan  1 00:29:35: %7:
2015-04-09_10-02-19 *Jan  1 00:29:35: %7: [Slot 1/0]:Upgrade processing is 100%
2015-04-09_10-02-19 *Jan  1 00:29:36: %7: %PKG_MGMT:auto-sync config
synchronization, Please wait for a moment....
2015-04-09_10-02-20 *Jan  1 00:29:36: %7:
2015-04-09_10-02-20 [ 1784.116069] rtc-pcf8563 6-0051: retrieved date/time is
not valid.
2015-04-09_10-02-20 *Jan  1 00:29:36: %7: [Slot 2/0]:auto sync config: space
not enough left 57229312, need 114597815
2015-04-09_10-02-20 *Jan  1 00:29:36: %7:
2015-04-09_10-02-20 *Jan  1 00:29:36: %7: [Slot 2/0]:auto sync package config
err
2015-04-09_10-02-20 *Jan  1 00:29:37: %7: [Slot 1/0]
2015-04-09_10-02-21 *Jan  1 00:29:37: %7:   device_name: s6k
2015-04-09_10-02-21 *Jan  1 00:29:37: %7:   status:     SUCCESS
```

```
2015-04-09_10-02-21 *Jan  1 00:29:37: %7: [Slot 2/0]
2015-04-09_10-02-21 *Jan  1 00:29:37: %7:   device_name: s6k
2015-04-09_10-02-21 *Jan  1 00:29:37: %7:   status:     SUCCESS
2015-04-09_10-02-21 *Jan  1 00:29:38: %7: %Do with  dtm callback....
2015-04-09_10-02-21 *Jan  1 00:29:38: %VSU-5-DTM_AUTO_UPGRADE:
Upgrading the system, wait a moment please.
```

17.13 upgrade auto-sync package

Use this command to configure the path of the upgrade package.

upgrade auto-sync patch *url*

Parameter Description

Parameter	Description
url	The path of installation package.

Defaults The default is the last upgrade path.

Command Mode Privileged EXEC mode

Default Level 2

Usage Guide It is recommended to use default settings.

Configuration Examples The following example sets the path to the upgrade package in the USB flash disk.

```
Ruijie# upgrade auto-sync package usb0:/eg1000m_main_1.0.0.0f328e91.bin
```

Verification Run the **show upgrade auto-sync** command to display current auto-sync policy.

If *url* provides normal path, run the **stat** command to check whether it can be accessed.

Prompt Messages The prompt message of successful running is displayed:

```
Upgrade auto-sync package is set as usb0:/eg1000m_main_1.0.0.0f328e91.bin
```

17.14 upgrade auto-sync patch

Use this command to configure the path of the upgrade patch.

upgrade auto-sync patch *url*

Parameter Description

Parameter	Description

url	The path of installation patch.

Defaults The default is the path of the upgrade patch used last time.

Command Mode Privileged EXEC mode

Default Level 2

Usage Guide It is recommended to use default settings.

Configuration Examples The following example sets the path of the upgrade patch.

```
Ruijie# upgrade auto-sync patch usb0:sp1.bin
```

Verification Run the **show upgrade auto-sync** command to display upgrade patch.
If *url* provides normal path, run the **stat** command to check whether it can be accessed.

Prompt Messages N/A

17.15 upgrade auto-sync policy

Use this command to set an auto-sync policy for the system.
upgrade auto-sync policy [**none** | **compatible** | **coordinate**]

Parameter Description

Parameter	Description
none	No auto-sync upgrade
compatible	Performs auto-synchronization based on the sequential order of versions.
coordinate	Synchronizes with the version based on the system upgrade patch stored on the supervisor module.

Defaults **coordinate**

Command Mode Privileged EXEC mode

Default Level 2

Usage Guide Check whether the upgrade package is ready before using the command.

Configuration Examples The following example sets the auto-sync policy of the device based on the version of supervisor modules.

```
Ruijie# upgrade auto-sync policy coordinate
```

Verification Display the current policy for auto-sync upgrade by running the **show upgrade auto-sync** command.

Prompt Messages The prompt message of successful running is displayed.

```
Upgrade auto-sync policy is set as coordinate.
```

17.16 upgrade auto-sync range

Use this command to set the range of auto-sync upgrade.

upgrade auto-sync range [**chassis** | **vsu**]

Parameter Description

Parameter	Description
chassis	Auto-sync version upgrade in the range of chassis
vsu	Auto-sync version upgrade in the range of the VSU system.

Defaults **vsu**

Command Mode Privileged EXEC mode

Default Level 2

Usage Guide It is recommended to set the parameter to vsu to ensure system version consistency to the most extent.

Configuration Examples The following example installs the auto-sync upgrade in the VSU system.

```
Ruijie# upgrade auto-sync range vsu
```

Verification Run the **show upgrade auto-sync** command to display the range of current auto-sync upgrade.

Prompt Messages The prompt message of successful running is displayed.

```
Upgrade auto-sync range is set as vsu.
```

17.17 upgrade download tftp

Use this command to download, install and upgrade installation packages from the tftp server.

upgrade download tftp:/*path* [**patch-active** | **patch-running**] [**force**]

upgrade download oob_tftp:/*path* [**patch-active** | **patch-running**] [**via mgmt** { *number* }] [**force**] [**vrf** *vrf-name*]

Parameter

Parameter	Description

Description

path	The path of installation packages on the tftp server This command is downloaded and upgraded automatically from the server.
via mgmt *number*	If thetransfer mode is*oob_tftp*and there are multipleMGMTports,you can select a specificport.
force	Enforces upgrade.
vrf	Downloads an installation package from the specified VRF.
vrf-name	Specifies a VRF name.

Command Mode Privileged EXEC mode

Default Level 2

Usage Guide This command is applicable to installation packages of all subsystem components, chassis devices, feature components and hot patches. This command is used to perform automatic installation, copy and upgrade of files.

Configuration Examples The following example upgrades the main package.

```
Ruijie# upgrade download
tftp://192.168.201.98/eg1000m_main_1.0.0.0f328e91.bin
Accessing tftp://192.168.201.98/eg1000m_main_1.0.0.0f328e91.bin...
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!
Transmission finished, file length 21525888 bytes.
 Upgrade processing is 10%
 Upgrade processing is 60%
 Upgrade processing is 90%
 Upgrade info [OK]
        Kernel version[2.6.32.91f9d21->2.6.32.9f8b56f]
        Rootfs version[1.0.0.2ad02537->1.0.0.1bcc12e8]
 Upgrade processing is 100%
Reload to take effect!
```

Verification Run the **show version detail** command to check whether the upgrade of a subsystem component is successful.
Run the **show component** command to check whether the upgrade of a feature component is successful.
Run the **show patch** command to check whether the upgrade is successful of a hot patch package.

Prompt The prompt message of successful running is displayed.

Messages

```
Upgrade info [OK];
```

The installation package is invalid or damaged and needs to be regained for upgrade command.

```
Invalid package file
```

The installation package is not available on the device and needs to be regained for upgrade command.

```
Device don't support
```

There is no need to upgrade the device.

```
The version in device is newer or the same
```

When there is insufficient space for upgrade, check USB flash disk attached on the device.

```
No enough space for decompress
```

Contact the service center to solve the system problem.

```
No enough space,rootfs been destroyed. Please upgrade in uboot
```

The existing patch package needs to be deleted.

```
Already exist patch, please uninstall before upgrade
```

The patch package is not compatible on this device. Replace the package..

```
Patch compatibility err
```

The upgrade of the patch package is not applied to the device. Regain the package.

```
Some origin component has change
```

17.18 clear storage

Use this command to remove an installation package on the local device.

clearstorage[*url*]

Parameter Description

Parameter	Description
url	A local *url* directory or full pathnameindicates where the installation package is stored

Command Mode Privileged EXEC mode

Default Level 2

Usage Guide This command is used to remove an installation package or all packages in a directory and all installation packages on the local device.

Configuration Examples

```
Ruijie#clear storage
Remove the whole storage directory?[y/n]y
Ruijie#clear storage usb0
Remove the file or directory usb0 from the storage?[y/n]y
Ruijie#
```

Verification Check specified *url*

Platforms N/A

18 PYTHON SHELL Commands

18.1 Python

Use this command to debug and run a Python script.

python *file_name args*

Parameter Description

Parameter	Description
file_name	Indicates the name of a script file. This script file is stored in the **flash:** directory. You can run the **python flash: file_name** command to locate this file.
args	Indicates the script file parameter.

Command Mode Privileged EXEC mode

Default Level 1

Usage Guide Use this command to debug and run a Python script.

- Access the Python console to debug the Python script.
- Run the **copy** command to upload the Python script to the device for execution.

Configuration Example The following example accesses the Python console to debug a Python script.

```
Ruijie#python
Python 2.7.11 (default, Jun 12 2018, 02:23:20)
[GCC 4.3.3] on linux2
Type "help", "copyright", "credits" or "license" for more information.
>>>
```

Prompt N/A

Platform Description N/A

Ethernet Switching Commands

1. Interface Commands
2. Port Module Type Commands
3. Single Fiber Commands
4. MAC Address Commands
5. Aggregate Port Commands
6. VLAN Commands
7. MAC VLAN Commands
8. Super VLAN Commands
9. Protocol VLAN Commands
10. Private VLAN Commands
11. MSTP Commands
12. GVRP Commands
13. LLDP Commands
14. QinQ Commands
15. HASH Simulator Commands
16. L3-PKT-COUNTER ENABLE Commands
17. Positioning Lamp Commands

1 Interface Commands

1.1 bandwidth

Use this command to set the bandwidth on the interface. Use the **no** form of this command to restore the default setting.

bandwidth *kilobits*

no bandwidth

Parameter Description

Parameter	Description
kilobits	Bandwidth per second, in the unit of Kbps.

Defaults If this command is not configured on the interface, use the show interface command to display the default setting in privileged EXEC mode.

Command Mode Interface configuration mode

Usage Guide This command does not affect the actual bandwidth on the interface. Instead, it is used to display the system the bandwidth specification. By default, the bandwidth is determined by the actual link rate on the interface. It can be set by the user as well.

Configuration Examples The following example sets the bandwidth on the interface to 64 Kbps.

```
Ruijie(config)#interface gigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# bandwidth 64
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.2 carrier-delay

Use this command to set the carrier delay on the interface. Use the **no** form of this command to restore the default value.

carrier-delay { [**milliseconds**] *num* | **up** [**milliseconds**] *num* **down** [**milliseconds**] *num*}

no carrier-delay

Parameter Description

Parameter	Description
num	(Optional) in the range from 0 to 60 in the unit of seconds.
milliseconds	(Optional) in the range from 0 to 60000 in the unit of milliseconds.
up	(Optional) Configures the delay after which DCD changes from Down to Up in status.
down	(Optional) Configures the delay after which DCD changes from Up to Down in status.

Defaults The default is 2 seconds.

Command Mode Interface configuration mode

Usage Guide This parameter refers to the delay after which the carrier detection signal DCD of the interface link changes from the Down status to the Up status or vice versa. If the DCD changes within the delay, the system will ignore such changes without disconnecting the upper data link layer for renegotiation. If the DCD carrier is disconnected for a long time, the parameter should be set longer to accelerate route aggregation so that the routing table can be converged more quickly. On the contrary, if the DCD carrier interruption period is shorter than the time used for route aggregation, you should set the parameter to a higher value to avoid unnecessary route vibration.

Configuration Examples The following example sets the carrier delay of serial interface to 5 seconds.

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config)# carrier-delay 5
```

The following example sets the carrier delay of serial interface to 100 milliseconds.

```
Ruijie(config)# interface GigabitEthernet 1/1
Ruijie(config-if-GigabitEthernet 1/1)#carrier-delay milliseconds
100
```

The following example sets the DCD delay from Down to Up in status to 100 milliseconds and from Up to Down to 200 milliseconds.

```
Ruijie(config)# interface GigabitEthernet 1/1
Ruijie(config-if-GigabitEthernet 1/1)# carrier-delay up
milliseconds 100 down milliseconds 200
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.3 clear counters

Use this command to clear the counters on the specified interface.

clear counters [*interface-id*]

Parameter Description

Parameter	Description
interface-id	Interface type and interface ID

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide In the privileged EXEC mode, use the **show interfaces** command to display the counters or the **clear counters** command to clear the counters. If the interface is not specified, the counters on all interfaces will be cleared.

Configuration Examples The following example clears the counters on interface gigabitethernet 1/1.

```
Ruijie# clear counters gigabitethernet 1/1
```

Related Commands

Command	Description
show interfaces	Displays the interface information.

Platform Description N/A

1.4 clear interface

Use this command to reset the interface.

clear interface *interface-id*

Parameter Description

Parameter	Description
interface-id	Interface type and interface ID

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide This command is only used on the switch port, member port of the L2 Aggregate port, routing port,

and member port of the L3 aggregate port. This command is equal to the **shutdown** and **no shutdown** commands.

Configuration Examples The following example resets the interface gigabitethernet 1/1.

```
Ruijie# clear interface gigabitethernet 1/1
```

Related Commands

Command	Description
shutdown	Disables the interface.

Platform Description N/A

1.5 clear link-state-change statistics

Use this command to clear the statistics of link status change on an interface.

clear link-state-change statistics *interface-type interface-number*

Parameter Description

Parameter	Description
interface-type interface-number	Interface type and interface number.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide In privileged EXEC mode, use the **show interfaces link-state-change** command to display the statistics of link status change on an interface.

In privileged EXEC mode, use the **clear link-state-change statistics** *interface-type interface-number* command to clear the statistics of link status change on an interface. If *interface-type* and *interface-number* are not specified, the statistics on all interfaces are cleared.

Configuration Examples The following example clears the statistics of link status change on the interface tenGigabitEthernet 0/1.

```
Ruijie# clear link-state-change statistics tenGigabitEthernet 0/1
```

Related Commands	Command	Description
	show interfaces	Displays the interface information.

Platform Description N/A

1.6 description

Use this command to configure the alias of interface. Use the **no** form of this command to restore the default setting.

description *string*

no description

Parameter Description	Parameter	Description
	string	Interface alias

Defaults No alias is configured by default.

Command Mode Interface configuration mode.

Usage Guide Use **show interfaces** to display the interface information, including the alias.

Configuration Examples The following example configures the alias of interface.

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# description GBIC-1
```

Related Commands	Command	Description
	show interfaces	Displays the interface information.

Platform Description N/A

1.7 duplex

Use this command to specify the duplex mode for the interface. Use the **no** form of this command to restore the default setting.

duplex { **auto** | **full** | **half** }
no duplex

Parameter Description

Parameter	Description
auto	Self-adaptive full duplex and half duplex
full	Full duplex
half	Half duplex

Defaults The default is **auto**,

Command Mode Interface configuration mode.

Usage Guide The duplex mode is associated with the interface type. Use **show interfaces** to display the duplex mode of the interface

Configuration Examples The following example specifies the duplex mode for the interface.

```
Ruijie(config-if)# duplex full
```

Related Commands

Command	Description
show interfaces	Displays the interface information.

Platform Description N/A

1.8 encapsluation dot1q

Use this command to encapsulate IEEE 802.1Q in interface mode. Use the **no** form of this command to restore the default setting.
encapsulation dot1Q *VLANID*
no encapsulation

Parameter Description

Parameter	Description
VLANID	Indicates the VLAN ID. The value range is from 1 to 4094.

Defaults The default encapsulation protocol is 802.1Q , and no VLAN is encapsulated.

Command Mode Sub-interface configuration mode.

Usage Guide 802.1Q, an IEEE standard protocol, is used to enable communications between Layer 2 and Layer 3 devices with VLAN partition performed.
802.1Q can only be encapsulated on the sub Ethernet interface.

Configuration Examples The following example encapsulates IEEE 802.1Q for interface 20, VLAN ID: 20.

```
Ruijie(config)# interface fastEthernet 0/0.20
Ruijie(config-subif)# encapsulation dot1Q 20
```

Related Commands

Command	Description
N/A	N/A.

Prompt Multiple sub-interfaces configured with the same VLAN are not permitted in some products.

```
Configuration of multiple subinterfaces
with the same vlan id (1) is not permitted.
This vlan id is already configured on interface GigabitEthernet 0/1.
```

1.9 errdisable recovery

Use this command to recover the interface in violation.
errdisable recovery [**interval** *time* | **cause** *link-state*]

Parameter Description

Parameter	Description
interval *time*	(Optional) Time for the command to take effect. The range is from 30 to 86,400 seconds.
cause *link-state*	(Optional) Recover the interface in violation due to REUP link tracking group.

Defaults N/A

Command Mode Global configuration mode, privileged EXEC mode

Usage Guide Use the **show interfaces status err-disable** command to check the violation causes and recover the port after network troubleshooting.

Configuration Examples The following example recovers the violation interface.

```
Ruijie(config)# errdisable recovery
Ruijie(config)# errdisable recovery cause link-state
Ruijie(config)# end
```

Related

Command	Description

Commands		
	show interfaces status err-disable	Displays the violation information

Platform Description N/A.

1.10 ethernet-port counter sample-period

Use this command to configure the statistical value sampling period of an Ethernet port.

ethernet-port counter sample-period [*seconds*]

Parameter Description

Parameter	Description
seconds	Statistical value sampling period of an Ethernet port in seconds.

Defaults The default value is 5 seconds.

Command Mode Global configuration mode

Default Level 14

Usage Guide

Note that a shorter sampling period indicates higher system resource consumption. After completing the configuration, check the CPU usage.

Configuration Examples The following example configures the statistical value sampling period of an Ethernet port to 1 second.

```
Ruijie(config)# ethernet-port counter sample-period 1
Ruijie(config)# end
```

1.11 ethernet-subport counter route-sample-period

Use this command to configure the statistical value sampling period of an Ethernet sub-port. Use the **no** form of this command to restore the default setting.

ethernet-subport counter route-sample-period [*seconds*]

no ethernet-subport counter route-sample-period

Parameter Description

Parameter	Description
seconds	Statistical value sampling period of an Ethernet sub-port in seconds.

Defaults The default value is 5 seconds.

Command Mode Global configuration mode

Default Level 14

Usage Guide Note that a shorter sampling period indicates higher system resource consumption. After completing the configuration, check the CPU usage.

Configuration Examples The following example configures the statistical value sampling period of an Ethernet sub-port to 1 second.

```
Ruijie(config)#ethernet-subport counter route-sample-period 1
Ruijie(config)# end
```

1.12 ethernet-port mtu

Use this command to globally set the MTU supported on the Ethernet interface.

ethernet-port mtu *num*

Parameter Description

Parameter	Description
num	64 to 9216 (or 65536, which varies by products)

Defaults This function is disabled by default.

Command Mode Global configuration mode.

Usage Guide This command is used to globally set the maximum transmission unit (MTU) supported on the Ethernet interface. Some chips do not support interface-based MTU configuration, but support only the global Ethernet interface-based MTU.

Configuration Examples The following example globally sets the MTU supported on Ethernet interface to 1200.

```
Ruijie(config)# ethernet-port mtu 1200
```

Related

Command	Description

Commands

show interfaces	Displays the interface information.

Platform Description N/A

1.13 fec mode

Use this command to enable or disable the FEC function.
fec mode {rs | none | auto}

Use the **no** form of this command to restore the default value.
no fec mode

Parameter Description

Parameter	Description
rs	Indicates the RS mode for enabling the FEC function, which is supported by 100 Gbps ports.
base-r	Indicates the base-r mode for enabling the FEC function.
none	Disables the FEC function.
auto	Indicates FEC function self-adaption, that is, the system determines whether to enable the FEC function based on the optical module and rate.

Defaults The default configuration depends on the product model.

Command Mode Interface configuration mode

Default Level 14

Usage Guide When one end runs FEC function, the other end should enable it, too.
On the premise of not affecting the negotiation status of the two ends, we suggest you NOT to:

- enable FEC function on the QSFP28-100G-LR4 optical module, on which FEC function is disabled by default.
- disable FEC function on QSFP28 modules (except QSFP28-100G-LR4), on which FEC function is enabled by default.

Configuration Examples The following example forcibly enables the FEC function on Interface HundredGigabitEthernet 1/1.

```
Ruijie(config)# interface HundredGigabitEthernet 1/1
```

```
Ruijie(config-if- HundredGigabitEthernet 1/1)# fec mode rs
```

The following example forcibly enables the FEC function on Interface TFGigabitEthernet 2/1.

```
Ruijie(config)# interface TFGigabitEthernet 2/1
Ruijie(config-if- TFGigabitEthernet 2/1)# fec mode base-r
```

Related Commands

Command	Description
show run	Displays the FEC configuration of port

1.14 flowcontrol

Use this command to enable or disable the flow control. Use the **no** form of this command to restore the default setting.

flowcontrol { **auto** | **off** | **on** }

no flowcontrol

Parameter Description

Parameter	Description
auto	Self-negotiates the flow control.
off	Disables the flow control.
on	Enables the flow control.

Defaults This function is disabled by default.

Command Mode Interface configuration mode.

Usage Guide Some products do not support asymmetric flow control, send and receive parameters. Use the **show interfaces** command to display the flow control configuration.

Configuration Examples The following example enables flow control on fastEthernet port 1/1.

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# flowcontrol on
```

Related Commands

Command	Description
show interfaces	Displays the interface information.

Platform Description N/A

1.15 flow-statistics include-interframe enable

Use this command to include the interframe gap in the flow statistics.

flow-statistics include-interframe enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Any CLI mode

Usage Guide It should be noted that after you run this command, all port rates are cleared and then recounted.

Configuration Examples The following example enables including of the interframe gap in the flow statistics.

```
Ruijie(config)# flow-statistics include-interframe enable
Ruijie(config)# end
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.16 negotiation mode

Use this command to enable or disable auto-negotiation mode. Use the **no** form of this command to restore the default setting.

negotiation mode { **on** | **off** }

no negotiation mode

Parameter Description

Parameter	Description
on	Enables auto-negotiation.
off	Disables auto-negotiation.

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide In general, the auto-negotiation status is determined by interface speed, duplex, flow control and auto-negotiation factor mode.

Configuration Examples The following example enables auto-negotiation mode on interface GigabitEthernet 1/1.

```
Ruijie(config)# interface GigabitEthernet 1/1
Ruijie(config-if-GigabitEthernet 1/1)# negotiation mode on
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.17 interface

Use this command to enter the interface configuration mode.
interface *interface-type interface-number*

Parameter Description

Parameter	Description
interface-type	The interface type.
interface-number	The interface ID.

Defaults N/A

Command Mode Global configuration mode

Usage Guide This command is used to enter interface configuration mode. The user can modify the interface configuration next,

Configuration Examples The following example enters configuration mode on Aggregateport 1.

```
Ruijie(config)# interface Aggregateport 1
Ruijie(config-if-Aggregateport 1)#
```

The following example enters configuration mode on GigabitEthernet 1/2.

```
Ruijie(config)# interface GigabitEthernet 1/2
Ruijie(config-if-GigabitEthernet 1/2)#
```

The following example configuration mode on VLAN 1.

```
Ruijie(config)# interface vlan 1
Ruijie(config-if-VLAN 1)#
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.18 interface range

Use this command to enter interface configuration mode on multiple interfaces.
interface range { *port-range* | **macro** *macro_name* }
Use this command to define the macro name of the **interface range** command.
define interface-range *macro_name*

Parameter Description

Parameter	Description
port-range	The interface type and ID range, entered in the form of *interface-type slot-number/interface-number*. The interface can be either an Ethernet physical interface or a loopback interface.
macro *macro_name*	The macro name which represents the interface range.

Defaults The **interface range** command is disabled by default.

Command Mode Global configuration mode

Usage Guide Use the define interface-range command to define a range of interfaces as the macro name and then use the **interface** range macro macro_name command to enter interface configuration mode on multiple interfaces.

Configuration Examples The following example enters interface configuration mode on multiple interfaces by setting the interface range.

```
Ruijie(config)# interface range gigabitEthernet 0/0, 0/2
Ruijie(config-if-range)# bandwidth 100
```

The following example enters interface configuration mode on multiple interfaces by defining the macro name.

```
Ruijie(config)# define interface-range route1 gigabitEthernet 0/0-2
Ruijie(config)# interface range macro route1
Ruijie(config-if-range)# bandwidth 100
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.19 load-interval

Use this command to set the interval for calculating load on the interface. Use the **no** form of this command to restore the default setting.
load-interval *seconds*
no load-interval

Parameter Description

Parameter	Description
seconds	In the range from 5 to 600 in the unit of seconds.

Defaults The default is 10.

Command Mode Interface configuration mode

Usage Guide This command is used to set the interval for calculating load on the interface. In general, the numbers of incoming and outgoing packets and bytes are calculated every 10 seconds. For example, if the parameter is set to 180 seconds, the following outcome is displayed when the **show interface gigabitEthernet 0/1** command is run.

```
3 minutes input rate 15 bits/sec, 0 packets/sec
3 minutes output rate 14 bits/sec, 0 packets/sec
```

Configuration Examples The following example sets the interval for calculating load on interface GigabitEthernet 0/1 to 180 seconds.

```
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# load-interval 180
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.20 logging

Use this command to print information on the interface.
logging [**link-updown** | **error-frame** | **link-dither | res-lack-frame | crc-frame**]

Parameter Description

Parameter	Description
link-updown	Prints the status change information.
error-frame	Prints the error frame information.
link-dither	Prints the port flapping information.
res-lack-frame	Prints the error frame information received by an inteface due to lack of resource.
crc-frame	Prints information indicating CRC failures.

Defaults This function is enabled by default.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example prints information on the interface.

```
Ruijie(config)# logging link-updown
Ruijie(config)# logging error-frame
Ruijie(config)# logging link-dither
Ruijie(config)# logging res-lack-frame
Ruijie(config)# logging crc-frame
```

Related Commands

Command	Description
N/A	N/A

Prompt When the interface status changes:
%LINK-3-UPDOWN: Interface GigabitEthernet 0/0, changed state to up.
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet 0/0, changed state to up.
When the interface receives error frame:
%PORT-3-ERR_FRAME: Received error frames on interface GigabitEthernet 0/0. Please check the physical link.
When the interface flaps:
%LINK-4-DITHER: The state of Interface GigabitEthernet 0/1 is astable. Please check the physical link.
%LINK-4-DITHER: The state of interface GigabitEthernet 0/1 is astable and the interface will be shutdown.Please check the physical link
When the interface receive error frame information due to lack of resource:
% PORT-3-DROP_FRAME: No more ingress buffer frames has been detected on interface GigabitEthernet 0/1. (no buffer frames: 10)

1.21 mac-address

Use this command to set MAC address on the interface. Use the no form of this command to disable this function.

mac-address *H.H.H*

no mac-adderss

Parameter Description

Parameter	Description
H.H.H	Indicates MAC address.

Defaults N/A

Command Mode Interface configuration mode

Usage Guide By default, each Ethernet interface has a globally unique MAC address. The MAC addresses of Ethernet interfaces can be modified if required. However, MAC addresses in the same LAN must be unique.

This command is supported only on L3 Ethernet ports and SVIs of some models.

Configuration Examples The following example displays how to configure MAC address on an Ethernet interface.

```
Ruijie(config)# interface fastethernet 0/0
Ruijie(config-if)# mac-address 00d0:f8fb:110d
```

Related Commands

Command	Description
N/A	N/A

Prompt When the MAC address is invalid:

% Malformed hex mac address.

1.22 mtu

Use this command to set the MTU supported on the interface.

mtu *num*

Parameter Description

Parameter	Description
num	64 to 9216 (or 65536, which varies by products)

Defaults The default is 1500.

Command Mode Interface configuration mode.

Usage Guide This command is used to set the maximum transmission unit (MTU) supported on the interface.

Configuration Examples The following example sets the MTU supported on interface gigabitethernet 1/1 to 9216.

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mtu 9216
```

Related Commands

Command	Description
show interfaces	Displays the interface information.

Platform Description N/A

1.23 mtu forwarding

Use this command to set the global MTU and IP MTU.

mtu forwarding *num*

Parameter Description

Parameter	Description
num	The value range is **64** to **9,216**.

Defaults The default value is **1,500**.

Command Mode Global configuration mode

Default Level 14

Usage Guide When the global interface link MTU changes, the IP MTU of an interface automatically changes to be consistent with the link MTU of the interface.

Configuration Examples The following example sets the global MTU to **9,000**.

```
Ruijie(config)# mtu forwarding 9000
```

Related Commands

Command	Description
show interfaces [*interface-type interface-number***] mtu forwarding**	Displays the interface MTU.

1.24 physical-port dither protect

Use this command to enable oscillation protection on the port.

physical-port dither protect

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode Global configuration mode

Usage Guide After you configure the **physical-port dither protect** command, the port will be shut down when the oscillation occurs for certain times.

If oscillation occurs on the port for 6 times within 2 seconds, a syslog will be printed. If syslog is printed for 10 consecutive times, the port will be shut down. If oscillation occurs on the port for over 10 times within 10 seconds, a syslog will be printed but the port will not be shut down.

Configuration Examples The following example enables oscillation protection on the port.

```
Ruijie(config)# physical-port dither protect
```

Related Commands

Command	Description
N/A	N/A

Prompt When the oscillation occurs:

1. If oscillation occurs on the port for 6 times within 2 seconds, or oscillation occurs on the port for over 10 times within 10 seconds

%LINK-4-DITHER: The state of Interface GigabitEthernet 0/1 is astable. Please check the physical link.

2. The final time if the port sends oscillation for 10 times within 20 seconds

%LINK-4-DITHER: The state of interface GigabitEthernet 0/1 is astable and the interface will be shutdown.Please check the physical link.

1.25 physical-port dither period

Use this command to enable oscillation detection on the port.

physical-port dither period *seconds* **threshold** *number* **period-times** *times*

Parameter

Parameter	Description

Description

seconds	Specifies the duration of a period in the unit of second ranging from 2 to 60.
number	Specifies the amount of detected flapping for a period. Once the configured value is reached for certain consecutive periods, operations may be taken against the port. The configurable value is from 5 to 10.
times	Specifies the number of successive periods for which the threshold is reached. You can choose any number from 1 to 10.

Defaults The default value of *seconds* is 2, *threshold* 6, and *period times* 10.

Command Mode Global configuration mode

Usage Guide Before this command is performed, by default, a port would be shut down if 6 or more oscillations occur within a 2s period and 10 such periods happen consecutively, or if 10 oscillations occur within 10s. After the **physical-port dither period** command is run, the mechanism of “10 oscillations within 10s” stops working.

Configuration Examples The following example configures oscillation detection on the port.

```
Ruijie(config)# physical-port dither period 3 threshold 5 period-times 4
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.26 port speed-mode

Use this command to configure the work rate mode of a 25 Gbps port.

port speed-mode {**25G | 10G** }

Parameter Description

Parameter	Description
25G	Indicates that a 25 Gbps port works in 25 Gbps rate mode.
10G	Indicates that a 25 Gbps port works in 10 Gbps rate mode.

Defaults A 25 Gbps port works in 25 Gbps rate mode by default.

Command Mode Interface configuration mode

Default Level 14

Usage Guide 1. Only 25 Gbps ports support this configuration. The four consecutive 25 Gbps ports of the same slot need to be set to work in the same rate mode.
2. Only 25 Gbps ports that work in the same rate mode can be added to the same aggregation group.
3. The **default interface** command will not clear the **port speed-mode** configuration of 25 Gbps ports.

Configuration Examples The following example configures Interfaces TFGigabitEthernet 2/1 through TFGigabitEthernet 2/4 to work in 10 Gbps rate mode.

```
Ruijie(config)# interface TFGigabitEthernet 2/2
Ruijie(config-if-TFGigabitEthernet 2/2)# port speed-mode 10G
Warning: Ports Tf2/1 - Tf2/4 will be set speed mode 10G. Continue? [Y/N]:Y
Ruijie(config-if-TFGigabitEthernet 2/2)# end
```

1.27 port-detect crc-frame errdisable

Use this command to get a port disabled if a continuous increase in CRC errors is detected. Use the **no** form of this command to restore the default setting.
port-detect crc-frame errdisable
no port-detect crc-frame errdisable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Interface configuration mode.

Usage Guide This command is supported on Ethernet ports.
Configuration of this feature on an Ethernet port does not change after the port joins an AP.

Configuration Examples The following example get a port err-disabled.

```
Ruijie(config)# interface GigabitEthernet 1/1
Ruijie(config-if-GigabitEthernet 1/1)# port-detect crc-frame errdisable
```

Related Commands

Command	Description
show running-config	Displays the protected ports route-deny configuration.

Platform Description N/A

1.28 port-detect crc-frame period-times

Use this command to configure the number of periods. During these periods, if a continuous increase in CRC errors is detected on a port, warnings are generated. Use the **no** form of this command to restore the default setting.

port-detect crc-frame period-times *num*

no port-detect crc-frame period-times

Parameter Description

Parameter	Description
num	Configures the number of periods. The range is 1 to 100.

Defaults The default number of periods is 5. That is, warnings are generated if the number of CRC errors increases for 5 consecutive periods on it.

Command Mode Interface configuration mode.

Usage Guide Warning Syslogs are printed if the configured number of periods is reached. And the related ports are shut down if the **port-detect crc-frame errdisable** command is run.
This command is supported on Ethernet ports.
Configuration of this feature on an Ethernet port does not change after the port joins an AP.

Configuration Examples The following example sets the number of periods to 10.

```
Ruijie(config)# interface GigabitEthernet 1/1
Ruijie(config-if-GigabitEthernet 1/1)# port-detect crc-frame period-times 10
```

Related Commands

Command	Description
show running-config	Displays the protected ports route-deny configuration.

Platform Description N/A

1.29 protected-ports route-deny

Use this command to configure L3 routing between the protected ports. Use the **no** form of this command to restore the default setting.

protected-ports route-deny

no protected-ports route-deny

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default..

Command Mode Global configuration mode.

Usage Guide The ports that are set as the protected ports can route on L3. Use this command to deny the L3 communication between protected ports. Use the **show running-config** command to display configuration.

Configuration Examples The following example configures L3 routing between the protected ports.

```
Ruijie(config)# protected-ports route-deny
```

Related Commands

Command	Description
show running-config	Displays the protected ports route-deny configuration.

Platform Description N/A

1.30 route-sample enable

Use this command to enable the sampling function on SVI or sub-interface.

route-sample enable

no route-sample enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide The function is disabled by default. You can enable it for the message statistics on SVI or sub-interface.
When the **route-sample enable** command is configured on an ip-sample enabled sub-interface, the ip-sample enable configuration will be cleared first and then the route-sample enable configuration will take effect.

Configuration Examples The following example enables the sampling function on SVI.

```
Ruijie(config)# interface vlan 1
Ruijie(config-if-VLAN 1)# route-sample enable
```

Related Commands

Command	Description

Platform Description N/A

1.31 show split summary

Use this command to display split information.
show split summary

Parameter Description

Parameter	Description
N/A	N/A

Command Mode All CLI user modes

Default Level 14

Usage Guide This command displays split information of all splittable ports.

Configuration Examples

The following example displays the split information about Interface GigabitEthernet 0/1.

```
Ruijie#show split summary
Port         SpliteStatus SplitPorts
Hu1/1        merged      Hu1/1:1    Hu1/1:2    Hu1/1:3    Hu1/1:4
Hu1/2        merged      Hu1/2:1    Hu1/2:2    Hu1/2:3    Hu1/2:4
Hu1/3        merged      Hu1/3:1    Hu1/3:2    Hu1/3:3    Hu1/3:4
Hu1/4        merged      Hu1/4:1    Hu1/4:2    Hu1/4:3    Hu1/4:4
Hu1/5        merged      Hu1/5:1    Hu1/5:2    Hu1/5:3    Hu1/5:4
Hu1/6        merged      Hu1/6:1    Hu1/6:2    Hu1/6:3    Hu1/6:4
Hu1/7        merged      Hu1/7:1    Hu1/7:2    Hu1/7:3    Hu1/7:4
Hu1/8        merged      Hu1/8:1    Hu1/8:2    Hu1/8:3    Hu1/8:4
Hu3/25       merged      Hu3/25:1   Hu3/25:2   Hu3/25:3   Hu3/25:4
Hu3/26       merged      Hu3/26:1   Hu3/26:2   Hu3/26:3   Hu3/26:4
```

Note: Port indicates the splittable master port, SpliteStatus indicates the current split status, and SplitPorts indicates member ports of the splittable port after splitting.

1.32 show vlans

Use this command to display the sub interface information of VLAN in privileged EXEC mode.

show vlans [*VLANID*]

Parameter Description

Parameter	Description
VLANID	Indicates ID of a VLAN.

Defaults

Command Mode

All CLI user mode

Usage Guide

N/A

Configuration Examples

```
Ruijie# show vlans
Virtual LAN ID:  3 (IEEE 802.1Q Encapsulation)
VLAN Interface FastEthernet 0/0.1
IP address: 1.1.1.1
Received:30 packets,
Transmitted: 30 packets
Virtual LAN ID:  4 (IEEE 802.1Q Encapsulation)
VLAN Interface FastEthernet 0/0.2
IP address: 1.1.2.1
Received:0 packets,
```

```
Transmitted: 0 packets
Transmitted: 0 packets
```

Parameters:

virtual LAN ID: VLAN ID

vLAN Interface: sub-interface of VLAN

Address: sub-interface address

Received: number of received packets

Transmitted: number of transmitted packets

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.33 shutdown

Use this command to disable an interface. Use the **no** form of this command to enable a disabled port.

shutdown

no shutdown

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Interface configuration mode

Usage Guide Use this command to stop the forwarding on the interface (Gigabit Ethernet interface, Aggregate port or SVI). You can enable the port with the **no shutdown** command. If you shut down the interface, the configuration of the interface exists, but does not take effect. You can view the interface status by using the **show interfaces** command.

If you use the script to run no shutdown frequently and rapidly, the system may prompt the interface status reversal.

Configuration Examples The following example disables an interface.

```
Ruijie(config)# interface aggregateport 1
Ruijie(config-if)# shutdown
```

The following example enables an interface.

```
Ruijie(config)# interface aggregateport 1
Ruijie(config-if)# no shutdown
```

Related Commands

Command	Description
clear interface	Resets the hardware.
show interfaces	Displays the interface information.

Platform Description N/A

1.34 snmp trap link-status

Use this command to send LinkTrap on a port. Use the **no** form of this command to disable this function.

snmp trap link-status

no snmp trap link-status

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default

Command Mode Interface configuration mode.

Usage Guide For an interface (for instance, Ethernet interface, AP interface, and SVI interface), this command sets whether to send LinkTrap on the interface. If the function is enabled, the SNMP sends the LinkTrap when the link status of the interface changes.

Configuration Examples The following example disables the interface from sending LinkTrap on the interface.

```
Ruijie(config)# interface gigabitEthernet 1/1
Ruijie(config-if)# no snmp trap link-status
```

The following example enables the interface to forward Link trap.

```
Ruijie(config)# interface gigabitEthernet 1/1
Ruijie(config-if)# snmp trap link-status
```

Related Commands

Command	Description
snmp trap link-status	Enables the interface to send LinkTrap on the interface.
no snmp trap link-status	Disables the interface from sending LinkTrap

	on the interface.

Platform Description N/A

1.35 snmp-server if-index persist

Use this command to set the interface index persistence. The interface index remains the same after the device is restarted.

snmp-server if-index persist

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide After this command is configured, all interface indexes are saved in the configuration file. After the device is restarted, interface indexes remain the same as before.

Configuration Examples The following example enables the interface index persistence.

```
Ruijie(config)# snmp-server if-index persist
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.36 snmp-server if-name enhance

Enable the enhanced name display for interfaces in the standard MIB node and for syslog of port status and LACP status. The interface name in the standard MIB node and syslog of port status and LACP status do not contain any space, and the ifName node shows the full name of the interface. By default, the interface name in the standard MIB node and syslog of port status and LACP status contain the space, and the ifName node shows the short name of the interface.

snmp-server if-name enhance

Parameter Description	Parameter	Description
	-	-

Defaults This function is disabled by default.

Command Mode Global configuration mode

Default Level 14

Usage Guide Run the **snmp-server if- name enhance** command, and then use SNMP to read the interface name in the standard MIB node, such as ifDescr and ifName. The result is the full name of interface without space (like GigabitEthernet0/1)

Configuration Examples 1: Enable the enhanced name display for interfaces in the standard MIB node.

```
Ruijie(config)# snmp-server if-name enhance
```

1.37 speed

Use this command to configure the speed on the port. Use the **no** form of this command to restore the default setting.

speed [**10 | 100 | 1000 | 10G | 40G | 100G |auto**]

Parameter Description	Parameter	Description
	10	The transmission rate of the interface is 10Mbps.
	100	The transmission rate of the interface is 100Mbps.
	1000	The transmission rate of the interface is 1000Mbps.
	10G	The transmission rate of the interface is 10Gbps.
	40G	The transmission rate of the interface is 40Gbps.
	100G	The transmission rate of the interface is 100Gbps.
	auto	Self-adaptive

Defaults The default is **auto**.

Command Mode Interface configuration mode.

Usage Guide If an interface is the member of an aggregate port, the rate of the interface depends on the rate of the aggregate port. You can set the rate of the interface, but it does not take effect until the interface exits the aggregate port. Use **show interfaces** to display configuration. The rate varies by interface types. For example, you cannot set the rate of a SFP interface to 10M or 100M.

Configuration Examples The following example sets the speed on interface gigabitethernet 1/1 to 100Mbps.

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# speed 100
```

Related Commands

Command	Description
show interfaces	Displays the interface information.

Platform Description N/A

1.38 split compatible mode

Use this command to configure the compatible naming mode for split member ports in global configuration mode. Use the **no** form of this command to disable the compatible naming mode. Use the **default** form of this command to restore the default setting.

split compatible mode

no split compatible mode

default split compatible mode

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, the compatible naming mode is disabled.

Command Mode Global configuration mode.

Usage Guide The configuration takes effect after a device restart. After the device restart, the split member ports will lose their original configurations and need to be re-configured.

Before the configuration takes effect, the port ID in a split member port's name is in the format of **slot ID/port ID:split member port ID**.

After the configuration takes effect, the port ID is in the format of **slot ID/port ID/split member port ID**.

In VSU mode, this command is not supported and the configuration will not take effect.

Configuration Examples The following example configures the compatible naming mode.

```
Ruijie(config)#split compatible mode
%Warning: please save configuration and restart the device for the configuration
of split compatible mode to take effect!
```

Related Commands

Command	Description
show interfaces	Displays the interface information.

Platform Description N/A

1.39 split interface

Use this command to split a master interface into multiple sub-interfaces. Use the **no** form of this command to restore the default setting.

split interface *interface-type interface-number* [**split-type** *split-type*]

no split interface *interface-type interface-number*

Parameter Description

Parameter	Description
interface-number	Specifies the interface number.
interface-type	Specifies the interface type.
split-type	Specifies the split type.

Defaults By default, the interface is in the combination mode.

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example splits the 100G interface 0/65 into four 25G interfaces.

```
Ruijie(config-if)# split interface forty-giga 0/65
```

Related Commands

Command	Description
show interfaces	Displays the interface information.

Platform Description N/A

1.40 switchport

Use this command to configure a Layer 3 interface. Use the **no** form of this command to restore the default settings.

switchport

no switchport

Parameter Description

Parameter	Description
N/A	N/A

Defaults All the interfaces are in Layer 2 mode by default.

Command Mode Interface configuration mode.

Usage Guide This command is valid only for physical interfaces. The **switchport** command is used to disable the interface and re-enable it. In this status, the device will send the information to indicate the connect status. If the interface is changed to Layer 3 mode from Layer 2, all the attributes in Layer 2 mode will be cleared.

Configuration Examples The following example configures a Layer 3 interface.

```
Ruijie(config-if)# switchport
```

Related Commands

Command	Description
show interfaces	Displays the interface information.

Platform Description N/A

1.41 switchport access

Use this command to configure an interface as a statics access port and add it to a VLAN. Use the **no** form of this command to restore the default setting.

switchport access vlan *vlan-id*

no switchport access vlan

Parameter Description

Parameter	Description
vlan-id	The VLAN ID at which the port to be added.

Defaults By default, the switch port is an access port and the VLAN is VLAN 1.

Command Mode Interface configuration mode.

Usage Guide Enter one VLAN ID. The system will create a new one and add the interface to the VLAN if you enter a new VLAN ID. If the VLAN ID already exists, the command adds the interface to the VLAN.

If the port is a trunk port, the operation does not take effect.

Configuration Examples The following example configures interface gigabitethernet 1/1 as a statistic access port and adds it to VLAN 2.

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# switchport access vlan 2
```

Related Commands

Command	Description
switchport mode	Configures the interface as Layer 2 mode (switch port mode).
switchport trunk	Configures a native VLAN and the allowed-VLAN list for the trunkport.

Platform Description N/A

1.42 switchport mode

Use this command to specify a L2 interface (switch port) mode. You can specify this interface to be an access port or a trunk port or an 802.1Q tunnel. Use the **no** form of this command to restore the default setting.

switchport mode { **access** | **trunk** }

no switchport mode

Parameter Description

Parameter	Description
access	Configures the switch port as an access port.
trunk	Configures the switch port as a trunk port.

Defaults The default is **access**.

Command Mode Interface configuration mode.

Usage Guide If a switch port mode is access port, it can be the member port of only one VLAN. Use **switchport access vlan** to specify the member of the VLAN.

A trunk port can be the member port of various VLANs defined by the allowed-VLAN list. The allowed VLAN list of the interface determines the VLANs to which the interface may belong. The trunk port is the member of all the VLANs in the allowed VLAN list. Use **switchport trunk** to define the allowed-VLANs list.

Configuration The following example specifies a L2 interface (switch port) mode.

Examples

```
Ruijie(config-if)# switchport mode trunk
```

Related Commands

Command	Description
switchport access	Configures an interface as a statics access port and assigns it to a VLAN.
switchport trunk	Configures a native VLAN and the allowed-VLAN list for the trunk port.

Platform Description N/A

1.43 switchport protected

Use this command to configure the interface as the protected port. Use the **no** form of this command to restore the default setting.

switchport protected

no switchport protected

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Interface configuration mode.

Usage Guide The ports that are set as the protected ports cannot switch on L2, but can route on L3. A protected port can communicate with an unprotected port. Use the **show interfaces** command to display configuration.

Configuration Examples The following example configures interface gigabitethernet 1/1 as a protected port.

```
Ruijie(config)#interface gigabitethernet 1/1
Ruijie(config-if)# switchport protected
```

Related Commands

Command	Description
show interfaces	Displays the interface information.

Platform Description N/A

1.44 switchport trunk

Use this command to specify a native VLAN and the allowed-VLAN list for the trunk port. Use the **no** form of this command to restore the default setting.

switchport trunk { **allowed vlan** { **all |** [**add** | **remove** | **except**] *vlan-list* } | **native vlan** *vlan-id* }

no switchport trunk { **allowed vlan** | **native vlan** }

Parameter Description

Parameter	Description
allowed vlan *vlan-list*	Configures the list of VLANs allowed on the trunk port. *vlan-list* can be a VLAN or a range of VLANs starting with the smaller VLAN ID and ending with the larger VLAN ID and being separated by hyphen, for example, 10 to 20. The segments can be separated with a comma (,), for example, 1 to 10, 20 to 25, 30, 33. all means that the allowed VLAN list contains all the supported VLANs; add means to add the specified VLAN list to the allowed VLAN list; remove means to remove the specified VLAN list from the allowed VLAN list; except means to add all the VLANs other than those in the specified VLAN list to the allowed VLAN list;
native vlan *vlan-id*	Configures the native VLAN.

Defaults The allowed VLAN list is all, the Native VLAN is VLAN1.

Command Mode Interface configuration mode.

Usage Guide Native VLAN:

A trunk port belongs to one native VLAN. A native VLAN means that the untagged packets received/sent on the trunk port belong to the VLAN. Obviously, the default VLAN ID of the interface (that is, the PVID in the IEEE 802.1Q) is the VLAN ID of the native VLAN. In addition, when frames belonging to the native VLAN are sent over the trunk port, they are untagged.

Allowed-VLAN List:

By default, a trunk port sends traffic to and received traffic from all VLANs (ID 1 to 4094). However, you can prevent the traffic from passing over the trunk by configuring allowed VLAN lists on a trunk.

Use show interfaces switchport to display configuration.

Configuration Examples The following example removes port 1/15 from VLAN 2.

```
Ruijie(config)# interface fastethernet 1/15
Ruijie(config-if)# switchport trunk allowed vlan remove 2
Ruijie(config-if)# end
Ruijie# show interfaces fastethernet1/15 switchport
```

```
Switchport is enabled
Mode is trunk port
Access vlan is 1,Native vlan is 1
Protected is disabled
Vlan lists is
1,3-4094
```

Related Commands

Command	Description
show interfaces	Displays the interface information.
switchport access	Configures an interface as a statics access port and assigns it to a VLAN.

Platform Description N/A

1.45 show interfaces

Use this command to display the interface information and optical module information.

show interfaces [*interface-type interface-number*] [**description [up | down] | switchport | trunk**]

Parameter Description

Parameter	Description
interface-id interface-number	Interface (including Ethernet interface, aggregate port, SVI or loopback interface).
description	The description of the interface, including the link status. up: statistics of up ports down: statistics of down ports
switchport	Layer 2 interface information.
trunk	Trunk port, applicable for physical port and aggregate port.

Defaults All interface information is displayed by default.

Command Mode Privileged EXEC mode.

Usage Guide This command is used to show all basic information if no parameter is specified.

Configuration Examples The following example displays the interface information when the Gi0/1 is a Trunk port.

```
SwitchA#show interfaces gigabitEthernet 0/1
Index(dec):1 (hex):1
GigabitEthernet 0/1 is DOWN , line protocol is DOWN
Hardware is Broadcom 5464 GigabitEthernet
```

```
Interface address is: no ip address
  MTU 1500 bytes, BW 1000000 Kbit
  Encapsulation protocol is Bridge, loopback not set
  Keepalive interval is 10 sec , set
  Carrier delay is 2 sec
  RXload is 1 ,Txload is 1
  Queueing strategy: FIFO
    Output queue 0/0, 0 drops;
    Input queue 0/75, 0 drops
  Switchport attributes:
    interface's description:""
    medium-type is copper
    lastchange time:0 Day: 0 Hour: 0 Minute:13 Second
    Priority is 0
    admin duplex mode is AUTO, oper duplex is Unknown
    admin speed is AUTO, oper speed is Unknown
flow receive control admin status is OFF,flow send control admin status is
OFF,flow receive control oper status is Unknown,flow send control oper status
is Unknown
broadcast Storm Control is OFF,multicast Storm Control is OFF,unicast Storm
Control is OFF
 Port-type: trunk
   Native vlan:1
Allowed vlan lists:1-4094
Active vlan lists:1, 3-4
  5 minutes input rate 0 bits/sec, 0 packets/sec
  5 minutes output rate 0 bits/sec, 0 packets/sec
    0 packets input, 0 bytes, 0 no buffer, 0 dropped
    Received 0 broadcasts, 0 runts, 0 giants
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 abort
    0 packets output, 0 bytes, 0 underruns , 0 dropped
0 output errors, 0 collisions, 0 interface resets
```

The following example displays the interface information when the Gi0/1 is an Access port.

```
SwitchA#show interfaces gigabitEthernet 0/1
Index(dec):1 (hex):1
GigabitEthernet 0/1 is DOWN  , line protocol is DOWN
Hardware is Broadcom 5464 GigabitEthernet
Interface address is: no ip address
  MTU 1500 bytes, BW 1000000 Kbit
  Encapsulation protocol is Bridge, loopback not set
  Keepalive interval is 10 sec , set
  Carrier delay is 2 sec
  RXload is 1 ,Txload is 1
```

```
  Queueing strategy: FIFO
    Output queue 0/0, 0 drops;
    Input queue 0/75, 0 drops
  Switchport attributes:
    interface's description:""
    medium-type is copper
    lastchange time:0 Day: 0 Hour: 0 Minute:13 Second
    Priority is 0
    admin duplex mode is AUTO, oper duplex is Unknown
    admin speed is AUTO, oper speed is Unknown
    flow receive control admin status is OFF,flow send control admin status
is OFF,flow receive control oper status is Unknown,flow send control oper status
is Unknown
broadcast Storm Control is OFF,multicast Storm Control is OFF,unicast Storm
Control is OFF
Port-type: access
Vlan id : 2
  5 minutes input rate 0 bits/sec, 0 packets/sec
  5 minutes output rate 0 bits/sec, 0 packets/sec
    0 packets input, 0 bytes, 0 no buffer, 0 dropped
    Received 0 broadcasts, 0 runts, 0 giants
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 abort
    0 packets output, 0 bytes, 0 underruns , 0 dropped
0 output errors, 0 collisions, 0 interface resets
```

The following example displays the layer-2 interface information when the Gi0/1 is a Hybrid port.

```
SwitchA#show interfaces gigabitEthernet 0/1
Index(dec):1 (hex):1
GigabitEthernet 0/1 is DOWN  , line protocol is DOWN
Hardware is Broadcom 5464 GigabitEthernet
Interface address is: no ip address
  MTU 1500 bytes, BW 1000000 Kbit
  Encapsulation protocol is Bridge, loopback not set
  Keepalive interval is 10 sec , set
  Carrier delay is 2 sec
  RXload is 1 ,Txload is 1
  Queueing strategy: FIFO
    Output queue 0/0, 0 drops;
    Input queue 0/75, 0 drops
  Switchport attributes:
    interface's description:""
    medium-type is copper
    lastchange time:0 Day: 0 Hour: 0 Minute:13 Second
    Priority is 0
```

```
   admin duplex mode is AUTO, oper duplex is Unknown
   admin speed is AUTO, oper speed is Unknown
   flow receive control admin status is OFF,flow send control admin status
is OFF,flow receive control oper status is Unknown,flow send control oper status
is Unknown
broadcast Storm Control is OFF,multicast Storm Control is OFF,unicast Storm
Control is OFF
Port-type: hybrid
Tagged vlan id:2
Untagged vlan id:none
  5 minutes input rate 0 bits/sec, 0 packets/sec
  5 minutes output rate 0 bits/sec, 0 packets/sec
    0 packets input, 0 bytes, 0 no buffer, 0 dropped
    Received 0 broadcasts, 0 runts, 0 giants
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 abort
    0 packets output, 0 bytes, 0 underruns , 0 dropped
0 output errors, 0 collisions, 0 interface resets
```

The following example displays the layer-2 information of the Gi0/1.

```
Ruijie# show interfacesgigabitEthernet 0/1 switchport
Interface Switchport ModeAccess Native Protected VLAN lists
--------- ---------- --------- ------ ------ ---------
GigabitEthernet 0/1 enabled Access 11  Disabled  ALL
```

Platform Description N/A

1.46 show interfaces counters

Use this command to display the received and transmitted packet statistics.

show interfaces [*interface-type interface-number*] **counters** [**increment** | **error** | **rate** | **summary**] **[up | down] [nozero]**

Parameter Description

Parameter	Description
interface-type interface-number	(Optional) The interface type and ID.
increment	Displays the packet statistics increased during the last sample interval.
error	Displays error packet statistics.
rate	Displays packet receiving and transmitting rate.

summary	Displays packet statistics summary.
up	(Optional) Displays the up port statistics.
down	(Optional) Displays the down port statistics.
nozero	(Optional) Displays the statistics of ports whose statistics is not zero.

Defaults N/A

Command Mode All CLI user mode

Usage Guide If you do not specify an interface, the packet statistics on all interfaces are displayed.

Configuration Examples The following example displays packet statistics on interface GigabitEthernet 0/1.

```
Ruijie#show interfaces GigabitEthernet 0/1 counters
Interface : GigabitEthernet 0/1
5 minute input rate  : 9144 bits/sec, 9 packets/sec
5 minute output rate : 1280 bits/sec, 1 packets/sec
Rxload             : 1%
InOctets           : 17310045
InPkts             : 1000(Unicast: 10%, Multicast: 10%, Broadcast: 80%)
InUcastPkts         : 100
InMulticastPkts     : 100
InBroadcastPkts     : 800
Txload             : 1%
OutOctets          : 1282535
OutPkts            : 1000(Unicast: 10%, Multicast: 10%, Broadcast: 80%)
OutUcastPkts        : 100
OutMulticastPkts    : 100
OutBroadcastPkts    : 800
Undersize packets   : 0
Oversize packets    : 0
collisions          : 0
Fragments          : 0
Jabbers            : 0
CRC alignment errors : 0
AlignmentErrors     : 0
FCSErrors          : 0
dropped packet events (due to lack of resources): 0
packets received of length (in octets):
  64:46264
  65-127: 47427
  128-255: 3478
  256-511: 658
  512-1023: 18016
```

```
  1024-1518: 125
Packet increment in last sampling interval(5 seconds):
  InOctets           : 10000
  InPkts             : 1000(Unicast: 10%, Multicast: 10%, Broadcast: 80%)
  InUcastPkts         : 100
  InMulticastPkts     : 100
  InBroadcastPkts     : 800
  OutOctets          : 10000
  OutPkts            : 1000(Unicast: 10%, Multicast: 10%, Broadcast: 80%)
  OutUcastPkts        : 100
  OutMulticastPkts    : 100
```

Note: Rxload refers to the receive bandwidth usage and Txload refers to the Tx bandwidth usage. InPkts is the total number of receive unicast, multicast and broadcast packets. OutPkts is the total number of transmit unicast, multicast and broadcast packets.
Packet increment in last sampling interval (5 seconds) represents the packet statistics increased during the last sample interval (5 seconds).

The following example displays the packet statistics on interface GigabitEthernet 0/1 increased during the last sample interval.

```
Ruijie#show interfaces GigabitEthernet 0/1 counters increment
Interface : GigabitEthernet 0/1
Packet increment in last sampling interval(5 seconds):
  InOctets           : 10000
  InPkts             : 1000(Unicast: 10%, Multicast: 10%, Broadcast: 80%)
  InUcastPkts         : 100
  InMulticastPkts     : 100
  InBroadcastPkts     : 800
  OutOctets          : 10000
  OutPkts            : 1000(Unicast: 10%, Multicast: 10%, Broadcast: 80%)
  OutUcastPkts        : 100
  OutMulticastPkts    : 100
```

The following example displays error packet statistics on interface GigabitEthernet 0/1.

```
Ruijie#show interfaces GigabitEthernet 0/1 counters increment
Interface    UnderSize          OverSize           Collisions
Fragments
------------ -------------------- -------------------- --------------------
--------------------
Gi0/1       0                 0                 0                 0
Interface    Jabbers            CRC-Align-Err       Align-Err
FCS-Err
------------ -------------------- -------------------- --------------------
--------------------
Gi0/1       0                 0                 0                 0
```

Note:

UnderSize is the number of valid packets smaller than 64 bytes.
OverSize is the number of valid packets smaller than 1518 bytes.
Collisions is the number of colliding transmit packets.
Fragments is the number of packets with CRC error or frame alignment error which are smaller than 64 bytes.
Jabbers is the number of packets with CRC error or frame alignment error which are smaller than 1518 bytes.
CRC-Align-Err is the number of receive packets with CRC error.
Align_Err is the number of receive packets with frame alignment error.
FCS-Err is the number of receive packets with FCS error.

The following example displays packet receiving and transmitting rate on interface GigabitEthernet 0/1.

```
Ruijie#show interface gigabitEthernet 0/1 counters rate
Interface    Sampling Time        Input Rate         Input Rate
Output Rate         Output Rate
                              (bits/sec)         (packets/sec)
(bits/sec)          (packets/sec)
------------ --------------------- -------------------- --------------------
-------------------- --------------------
Gi0/1        5 seconds            23391               23
124                  0
```

Note: Sampling Time is the time when packets are sampled. Input rate is packet receiving rate and Output rate is packet transmitting rate.

The following example displays packet statistics summary on interface GigabitEthernet 0/1.

```
Ruijie#show interface gigabitEthernet 0/1 counters summary
Interface     InOctets           InUcastPkts         InMulticastPkts
InBroadcastPkts
------------- -------------------- -------------------- --------------------
--------------------
Gi0/1        1475788005          1389               45880503
11886621
Interface     OutOctets           OutUcastPkts        OutMulticastPkts
OutBroadcastPkts
------------- -------------------- -------------------- --------------------
--------------------
Gi0/1         6667915             6382                31629
13410
```

Note:

InOctets is the total number of packets received on the interface. InUcastPkts is the number of unicast packets received on the interface. InMulticastPkts is the number of multicast packets received on the interface. InBroadcastPkts is the number of broadcast packets received on the interface.
OutOctets is the total number of packets transmitted on the interface. OutUcastPkts is the number of

unicast packets transmitted on the interface. OutMulticastPkts is the number of multicast packets transmitted on the interface. OutBroadcastPkts is the number of broadcast packets transmitted on the interface.

The following example displays the statistics of discarded packets on interface tenGigabitEthernet 0/1

```
Ruijie # #show interface gigabitEthernet 1/0/6 counters drops
Interface : GigabitEthernet 1/0/6
 Input dropped packets                : 2453
 Input no buffer packets              : 0
 Input qos dropped packets            : 0
 Output dropped packets               : 0
 Output no buffer packets             : 0
 Forwarding entry dropped packets       : 2453
```

Input dropped: number of discarded packets, not including the packets discarded due to qos/resource limits

Input no buffer: number of discarded packets when receiving due to resource limits

Input qos dropped: number of packets discarded due to qos limits

Output dropped packets: number of discarded packets when forwarding

Output no buffer: number of packets failed to be forwarded due to resource limit

Forwarding entry dropped: number of discarded packets when forwarding, including inflow and outflow direction. This may not be supported on some products

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.47 show interfaces counters rate physical-layer

Use this command to packet rate count on the physical layer.

show interfaces [*interface-type interface-number*] **counters rate physical-layer [up | down] [nozero]**

Parameter Description

Parameter	Description
interface-type interface-number	The interface type and ID. The default is all interfaces.
up	(Optional) Displays the port up statistics.
down	(Optional) Displays the port down statistics.
nozero	(Optional) Displays the port statistics that is not zero.

Defaults N/A

Command Mode Any CLI user Mode

Usage Guide If you do not specify an interface, the link state statistics of all interfaces are displayed.

Configuration Examples The following example displays the rate statistics of interface TenGigabitEthernet 0/1.

```
Ruijie(config-if-TenGigabitEthernet 0/1)#show interface  tenGigabitEthernet
0/1 counters rate physical-layer
Interface    Sampling Time        Input Rate          Input Rate
Output Rate         Output Rate
                                (bits/sec)          (packets/sec)
(bits/sec)          (packets/sec)
------------ -------------------- -------------------- --------------------
-------------------- --------------------
Te0/1       5 seconds           655557576             301267
655557132
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.48 show interfaces link-state-change statistics

Use this command to display the link state change statistics, including the time and count.

show interfaces [*interface-type interface-number*] **link-state-change statistics**

Parameter Description

Parameter	Description
interface-type interface-number	The interface type and ID.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide If you do not specify an interface, the link state statistics of all interfaces are displayed.

Configuration Examples

```
Ruijie#show int link-state-change statistics
Interface    Link state  Link state change times   Last change time     Link-dither begin
Link-dither end
-----------  ----------  ------------------------  -------------------
-------------------  ----------------
Te0/1        down        0                         2018-05-05 11:07:45  none
none
```

Note:

Link state change times: Change times of link state. Use the **clear link-state-change statistics** *interface-type interface-number command* to clear the times.

Last change time: Time of last link state change

Link-dither begin: Start time of the recent frequent link oscillation, none indicates no frequent oscillation

Link-dither end: End time of the recent frequent link oscillation, none indicates no frequent oscillation

Frequent oscillation: oscillation occurs for 6 times within 2 seconds

When frequent oscillation occurs, the detection time is recorded as the start time, and continuethe detection in 2 seconds. When frequent oscillation can not be detected or the port is shut down, the detection time is recorded as the end time.

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

1.49 show interface mtu forwarding

Use this command to display MTU settings.

show interface [*interface-type interface-number*] **mtu forwarding**

Parameter Description

Parameter	Description
interface-type interface-number	(Optional) The interface type and ID.

Defaults

N/A

Command Mode

All CLI user mode

Usage Guide The changes of link MTU configured globally will cause the changes of IP MTU of interfaces. IP MTU of interfaces will keep consistent with the link MTU.

Configuration Examples The following example displays the MTU information of interface hundredGigabitEthernet 1/1/1.

```
Interface                  Mtu     IP Mtu
------------------------------ ------- -------
HundredGigabitEthernet 1/1     1500    NA
```

Note: IP MTU is displayed as NA on a switch port

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.50 show interfaces status

Use this command to display interface status information.

show interfaces [*interface-type interface-number*] **status**

Parameter Description

Parameter	Description
interface-type interface-number	The interface type and ID.
status	Displays interface status information, including speed and duplex.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide If you do not specify an interface, the status information of all interfaces is displayed.

Configuration Examples The following example displays the status information of interface GigabitEthernet 0/1.

```
Ruijie#show interfaces GigabitEthernet 0/1 status
Interface            Status      Vlan    Duplex  Speed   Type
-------------------  ----------  ------  ------  ------  ------
GigabitEthernet 0/1    up          1       Full    1000M   copper
```

Related Commands

Command	Description

N/A	N/A

Platform Description N/A

1.51 show interfaces status err-disable

Use this command to display the interface violation status.

show interfaces [*interface-type interface-number*] **status err-disable**

Parameter Description

Parameter	Description
interface-type interface-number	(Optional) The interface type and ID.

Defaults

Command Mode All CLI user modes

Usage Guide If you do not specify an interface, violation status of all interfaces is displayed.

Configuration Examples The following example displays the violation status of interface GigabitEthernet 0/1.

```
Ruijie#show interface gigabitEthernet 0/1 status err-disabled
Interface                    Status         Reason
-------------------------------- ---------------- ----------------
GigabitEthernet 0/1            err-disabled    BPDU Guard
```

The violation status is displayed as **err-disabled**.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.52 show interfaces transceiver

Use this command to display transceiver information of the interface.

show interfaces [*interface-type interface-number*] **transceiver** [**alarm** | **diagnosis**]

Parameter

Parameter	Description

Description

interface-type interface-number	The interface type and ID.
transceiver	Displays the transceiver information.
alarm	Displays the alarm message of the transceiver. If there is no alarm message, it is displayed as None.
diagnosis	Displays the diagnostic parameters of the transceiver.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide If you do not specify an interface, the transceiver information of all interfaces is displayed.

Configuration Examples The following example displays the transceiver information of interface Gigabitethernet 5/4.

```
Ruijie#show interfaces GigabitEthernet 5/4 transceiver
Transceiver Type    :  1000BASE-SX-SFP
Connector Type      :  LC
Wavelength(nm)      :  850
Transfer Distance   :
   50/125 um OM2 fiber
      -- 550m
   62.5/125 um OM1 fiber
      -- 270m
Digital Diagnostic Monitoring  : YES
Vendor Serial Number          : 101680093602489
```

The following example displays the alarm message of the transceiver of interface Gigabitethernet 5/4.

```
Ruijie#show interfaces GigabitEthernet 5/4 transceiver alarm
gigabitEthernet 5/4 transceiver current alarm information:
RX  loss of signal
```

The following example displays the diagnostic parameters of the transceiver of interface Gigabitethernet 5/4.

```
Ruijie#show interfaces GigabitEthernet 5/4 transceiver diagnosis
Current diagnostic parameters[AP:Average Power]:
Temp(Celsius)   Voltage(V)     Bias(mA)          RX power(dBm)      TX
power(dBm)
38(OK)          3.20(OK)        0.04(OK)
-40.00(alarm)[AP]   -40.00(alarm)
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.53 show interfaces usage

Use this command to display bandwidth usage of the interface.

show interfaces [*interface-type interface-number*] **usage [up | down]**

Parameter Description

Parameter	Description
interface-type interface-number	(Optional) The interface type and ID.
up	(Optional) Displays the bandwidth usage of up port
down	(Optional) Displays the bandwidth usage of down port

Defaults N/A

Command Mode All CLI user modes

Usage Guide If you do not specify an interface, the bandwidth usage of all interfaces is displayed. Bandwidth refers to the actual link bandwidth rather than the *bandwidth* parameter configured on the interface.

Configuration Examples The following example displays bandwidth usage of interface GigabitEthernet 0/1.

```
Interface        Bandwidth    Average Usage    Input Usage     Output Usage
GigabitEthernet 0/0    1000 Mbit    55.25%           50.00%          60.50%
```

Bandwidth refers to the interface link bandwidth, the maximum speed of link.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.54 show interfaces brief

Use this command to display brief information of interfaces, including interface status, output and input bandwidth usage, and the numbers of output and input packet errors.

show interfaces [*interface-type interface-number*] **brief [up | down]**

Parameter Description

Parameter	Description
interface-type interface-number	Specifies interface type and interface number. Information of all interfaces are displayed if this field is not specified.
up	Indicates connected interfaces.
down	Indicated disconnected interfaces.

Command Mode All CLI user modes

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays the brief information about Interface GigabitEthernet 0/1.

```
Ruijie#show interfaces tenGigabitEthernet 0/1 brief
down: link down
*down: administratively down
disabled: err-disabled(Please reference to command [show interface status err-disabled] for detail.)
Interface  Link Stat   Protocol Stat   Input Usage    Output Usage   inErrors    outErrors
--------   ---------   --------------  --------------   -------------  ----------  ----------
Te0/1     disabled    down          0.00%          0.00%         0
0
```

Note: If an interface is disabled, you can run the command to find out why it is error disabled. 0.01% is displayed when the usage is lower than 0.01% and there is network traffic working.

The following example displays the brief information about connected interfaces.

```
Ruijie#show interfaces brief up
down: link down
*down: administratively down
disabled: err-disabled(Please reference to command [show interface status err-disabled] for detail.)
Interface  Link Stat  Protocol Stat   Input Usage    Output Usage   inErrors    outErrors
--------   ---------  --------------  --------------   -------------  ----------  ----------
Te0/1     up        up            78.20%         83.40%        0
```

```
0
Te0/2     up        up            73.40%         82.00%         0
0
```

The following example displays the brief information of all interfaces.

```
Ruijie#show interfaces brief
down: link down
*down: administratively down
disabled: err-disabled(Please reference to command [show interface status
err-disabled] for detail.)
Interface  Link Stat  Protocol Stat   Input Usage    Output Usage
inErrors    outErrors
--------   ---------  --------------  --------------   -------------
----------  ----------
Te0/1     down      down          0.00%          0.00%          0
0
Te0/2     down      down          0.00%          0.00%          0
0
Te0/3     down      down          0.00%          0.00%          0
0
Te0/4     down      down          0.00%          0.00%          0
0
Te0/5     down      down          0.00%          0.00%          0
0
Te0/6     down      down          0.00%          0.00%          0
0
Te0/7     down      down          0.00%          0.00%          0
0
Te0/8     down      down          0.00%          0.00%          0
0
Te0/9     down      down          0.00%          0.00%          0
0
Te0/10    disabled   down          0.00%          0.00%          0
0
```

1.55 ip-sample enable

Use this command to enable statistics of IP packets. Use the **no** form of this command to restore the default setting.

ip-sample enable [**brief**]
no ip-sample enable [**brief**]

Parameter Description

Parameter	Description
brief	The IP packets are unicast/multicast-insensitive.

Defaults By default, statistics of IP packets are disabled.

Command Mode Interface configuration mode

Usage Guide It should be noted that the command is supported on physical ports, APs and sub-interfaces and is not supported by all models.
When the **route-sample enable** command is configured on an ip-sample enabled sub-interface, the ip-sample enable configuration will be cleared first and then the route-sample enable configuration will take effect.

Configuration Examples The following example enables statistics of IP packets.

```
Ruijie(config-if-TFGigabitEthernet 0/1)#ip-sample enable
Ruijie(config-if-TFGigabitEthernet 0/1)#show this
Building configuration...
!
 no switchport
 ip-sample enable
!
end
Ruijie(config-if-TFGigabitEthernet 0/1)#
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2 Port Module Type Commands

2.1 transceiver

Use this command to configure the module type for ports.

transceiver { *module_type* }

Parameter Description

Parameter	Description
100GBASE-Activecable	Indicates the 100G AOC module type
100GBASE-COPPER	Indicates the 100G copper cable module type.
100GBASE-FIBER	Indicates the 100G optical module type.
40GBASE-Activecable	Indicates the 40G AOC module type
40GBASE-COPPER	Indicates the 40G copper cable module type
40GBASE-FIBER	Indicates the 40G optical module type
25GBASE-Activecable	Indicates the 25G AOC module type
25GBASE-COPPER	Indicates the 25G copper cable module type.
25GBASE-FIBER	Indicates the 25G optical module type.
10GBASE-Activecable	Indicates the 10G AOC module type
10GBASE-COPPER	Indicates the 10G copper cable module type.
10GBASE-FIBER	Indicates the 10G optical module type.

Defaults The port module type is not configured by default. The software automatically adapts to the module type based on the inserted modules.

Command Mode Interface configuration mode

Default Level 14

Usage Guide It is recommended to configure the command when the port is in Down status.
The module type needs to be configured based on actual modules. You can use the **default** form of this command to restore the default configuration.

Configuration Example The following example configures the 100G AOC module type.

```
Ruijie(config-if-HundredGigabitEthernet 0/49)#transceiver 100GBASE-Activecable
```

Common Errors N/A

Prompt N/A

Platform	S6500_RGOS11.0(5)B9P62: S6510-48VS8CQV1.0, S6510-48VS8CQ V2.0.
Description	S6250-48XS8CQS6500-X86_RGOS11.0(5)B9P62: S6510-48VS8CQ-X, S6510-32CQ. S6500-X86_RGOS11.0(5)B9P63: S6510-48VS8CQ-X S6500_RGOS11.0(5)B9P71: S6510-48VS8CQV1.0, S6510-48VS8CQ V2.0

3 Single Fiber Commands

3.1 transport mode rx

Use this command to enable the SF Rx mode on a port. Use the **no** form of this command to restore the dual-fiber bidirectional mode.

transport mode rx
no transport mode

Parameter Description

Parameter	Description
N/A	N/A

Defaults The dual-fiber bidirectional mode is enabled by default.

Command Mode Interface configuration mode

Default Level 14

Usage Guide Use this command to enable the SF Rx mode. After the SF Rx mode is enabled on a port, thorough physical isolation is implemented in the transmission direction and the port cannot send packets.

Configuration Example The following example configures the SF Rx mode.

```
Ruijie#configure
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#int hundredGigabitEthernet 2/49
Ruijie(config-if-HundredGigabitEthernet 2/49)#transport mode rx
Ruijie(config-if-HundredGigabitEthernet 2/49)#exit
Ruijie(config)#
```

Common Errors N/A

Prompt N/A

Platform Description N/A

3.2 show transport mode rx

Use this command to display information about the port in SF Rx mode.

show transport mode rx

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide Use this command to display information about the port in SF Rx mode.

Configuration Example The following example displays information about the port in SF Rx mode.

```
Ruijie#show transport mode rx
  mode rx      port
               ---------------------------
           Hu2/49,
Ruijie#
```

Common Errors N/A

Prompt N/A

Platform Description N/A

4 MAC Address Commands

4.1 clear mac-address-table dynamic

Use this command to clear the dynamic MAC address.

clear mac-address-table dynamic [**address** *mac-addr* [**interface** *interface-id*] [**vlan** *vlan-id*]

Parameter Description

Parameter	Description
dynamic	Clears all the dynamic MAC addresses.
address *mac-addr*	Clears the specified dynamic MAC address.
interface *interface-id*	Clears all the dynamic MAC addresses of the specified interface.
vlan *vlan-id*	Clears all the dynamic MAC addresses of the specified VLAN, in the range from 1 to 4094.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide Use the **show mac-address-table dynamic** command to display all the dynamic MAC addresses.

Configuration Examples The following command clears all the dynamic MAC addresses.

```
Ruijie# clear mac-address-table dynamic
```

Related Commands

Command	Description
show mac-address-table dynamic	Displays dynamic MAC address.

Platform Description N/A

4.2 mac-address-learning (global)

Use this command to enable MAC address learning globally. Use the **no** or **default** form of this command to restore the default setting.

mac-address-learning enable

Use this command to disable MAC address learning globally.

mac-address-learning disable

Use this command to restore MAC address learning globally.

default mac-address-learning

Parameter Description

Parameter	Description
enable	Enables MAC address learning globally.
disable	Disables MAC address learning globally.

Defaults The **mac-address-learning enable** command is enabled by default.

Command Mode Global configuration mode

Usage Guide When this function is enabled, the MAC address is learned in global configuration mode the same as learned in interface configuration mode.

Configuration Examples The following example disables MAC address learning globally.

```
Ruijie(config)# mac-address-learning disable
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.3 mac-address-learning

Use this command to enable the port address learning. Use the **no** form of this command to restore the default setting.

mac-address-learning

no mac-address-learning

Parameter Description

Parameter	Description
N/A	N/A

Defaults The address learning function is enabled.

Command Mode Interface configuration mode.

Usage Guide MAC address learning cannot be disabled on the port where the security function is enabled. The security function cannot be configured on the port where address learning is disabled. When the command **default interface** is run in global configuration mode, if there is any layer-2 sub-interface, the MAC address learning cannot restore the default settings.

Configuration Examples The following example disables the port address learning function.

```
Ruijie(config-if)# no mac-address-learning
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.4 mac-address-table aging-time

Use this command to specify the aging time of the dynamic MAC address. Use the **no** form of the command to restore the default setting.

mac-address-table aging-time *seconds*

no mac-address-table aging-time

Parameter Description

Parameter	Description
seconds	Aging time of the dynamic MAC address (in seconds). The time range depends on the switch.

Defaults The default is 300.

Command Mode Global configuration mode.

Usage Guide Use **show mac-address-table** aging-time to display configuration.

Use **show mac-address-table dynamic** to display the dynamic MAC address table.

Configuration Examples The following example sets the aging time of the dynamic MAC address to 150 seconds.

```
Ruijie(config)# mac-address-table aging-time 150
```

Related Commands

Command	Description
show mac-address-table aging-time	Displays the aging time of the dynamic MAC address.
show mac-address-table dynamic	Displays dynamic MAC address.

Platform Description N/A

4.5 mac-address-table filtering

Use this command to configure the filtering MAC address. Use the **no** form of the command to restore the default setting.

mac-address-table filtering *mac-address* **vlan** *vlan-id*

no mac-address-table filtering *mac-address* **vlan** *vlan-id*

Parameter Description

Parameter	Description
mac-address	Filtering Address
vlan-id	VLAN ID, in the range from 1 to 4094.

Defaults No filtering address is configured by default.
When configuring this command without the **source** or **destination** specified, the frame received in the specified VLAN, which has the same source/destination MAC address with the specified MAC address, will be filtered.

Command Mode Global configuration mode.

Usage Guide The filtering MAC address shall not be a multicast address. Use the **show mac-address-table filtering** command to display the filtering MAC addresses.

Configuration Examples The following example configures the filtering MAC address for VLAN 1.

```
Ruijie(config)# mac-address-table filtering 00d0f8000000 vlan 1
```

Related Commands

Command	Description
clear mac-address-table filtering	Clears the filtering MAC address.

Platform Description N/A

4.6 mac-address-table notification

Use this command to enable the MAC address notification function. Use The **no** form of the command to restore the default setting.
mac-address-table notification [**interval** *value* | **history-size** *value*]
no mac-address-table notification [**interval** | **history-size**]

Parameter Description

Parameter	Description
interval *value*	Sets the interval of sending the MAC address trap message, 1 second by default.
history-size *value*	Sets the maximum number of the entries in the MAC address notification table, 50 entries by default.

Defaults By default, the interval is 1 and the maximum number of the entries in the MAC address notification table is 50.

Command Global configuration mode.

Mode

Usage Guide The MAC address notification function is specific for only dynamic MAC address and secure MAC address. No MAC address trap message is generated for static MAC addresses. In the global configuration mode, you can use the **snmp-server enable traps mac-notification** command to enable or disable the switch to send the MAC address trap message.

Configuration Examples The following example enables the MAC address notification function.

```
Ruijie(config)# mac-address-table notification
Ruijie(config)# mac-address-table notification interval 40
Ruijie(config)# mac-address-table notification history-size 100
```

Related Commands

Command	Description
snmp-server enable traps	Sets the method of handling the MAC address trap message..
show mac-address-table notification	Displays the MAC address notification configuration and the MAC address trap notification table.
snmp trap mac-notification	Enables the MAC address trap notification function on the specified interface.

Platform Description N/A

4.7 mac-address-table static

Use this command to configure a static MAC address. Use the **no** form of the command to restore the default setting.

mac-address-table static *mac-addr* **vlan** *vlan-id* **interface** *interface-id*

no mac-address-table static *mac-addr* **vlan** *vlan-id* **interface** *interface-id*

Parameter Description

Parameter	Description
mac-addr	Destination MAC address of the specified entry
vlan-id	VLAN ID of the specified entry, in the range from 1 to 4094.
interface-id	Interface (physical interface or aggregate port) that packets are forwarded to

Defaults No static MAC address is configured by default.

Command Mode Global configuration mode.

Usage Guide A static MAC address has the same function as the dynamic MAC address that the switch learns. Compared with the dynamic MAC address, the static MAC address will not be aged out. It can only be configured and removed by manual. Even if the switch is reset, the static MAC address will not be lost. A static MAC address shall not be configured as a multicast address. Use show

mac-address-table static to display the static MAC address.

Configuration Examples The following example configures a static MAC address.

```
Ruijie(config)# mac-address-table static 00d0.f800.073c vlan 4 interface gigabitethernet 1/1
```

Related Commands

Command	Description
show mac-address-table static	Displays the static MAC address.

Platform Description N/A

4.8 max-dynamic-mac-count

Use this command to set the maximum number of MAC address learned dynamically on the VLAN or interface. Use the **no** or **default** form of this command to restore the default setting.

max-dynamic-mac-count *num*

no max-dynamic-mac-count

default max-dynamic-mac-count

Parameter Description

Parameter	Description
num	Sets the maximum number of MAC addresses.

Defaults The maximum number is not set by default.

Command Mode VLAN configuration mode / Interface configuration mode

Usage Guide This command is used to set the maximum number of MAC addresses learned dynamically on the VLAN or interface.

If the number of MAC addresses dynamically learned on the VLAN or interface reaches the upper limit, MAC address learning is disabled on the VLAN or interface.

If the number of MAC addresses reaches the upper limit when this command is configured, the surplus MAC addresses are not cleared. Instead, they remain and then age.

Configuration Examples The following example sets the maximum number of MAC addresses dynamically learned on VLAN 1.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vlan 1
Ruijie(config-vlan)#max-dynamic-mac-count 160
```

The following example sets the maximum number of MAC addresses dynamically learned on interface GigabitEthernet 0/1.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#interface GigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)#max-dynamic-mac-count 160
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

4.9 max-dynamic-mac-count exceed-action

Use this command to set the action if the dynamic MAC address learned on the VLAN or interface exceeds the limit. Run the **no** form or **default** form of this command to restore the default setting.

max-dynamic-mac-count exceed-action forward | discard

no max-dynamic-mac-count exceed-action *forward* | *discard*

default max-dynamic-mac-count exceed-action *forward* | *discard*

Parameter Description	Parameter	Description
	forward	Forwards the packets if the dynamic MAC address learned on the VLAN or interface exceeds the limit.
	discard	Discards the packets if the dynamic MAC address learned on the VLAN or interface exceeds the limit.

Defaults By default, the packets can be forwarded if the upper limit of the learned MAC address is exceeded.

Command Mode VLAN configuration mode / Interface configuration mode

Usage Guide This command is used to set the action if the dynamic MAC address learned on the VLAN or interface exceeds the limit.

Configuration Examples The following example sets the maximum number of MAC addresses dynamically learned on VLAN 1. The packets will be discarded when the maximum number of MAC address learned is exceeded.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vlan 1
Ruijie(config-vlan)#max-dynamic-mac-count 160
Ruijie(config-vlan)#max-dynamic-mac-count exceed-action discard
```

Ruijie(config-vlan)#max-dynamic-mac-count exceed-action discardThe following example sets the maximum number of MAC addresses dynamically learned on interface GigabitEthernet 0/1. The packets will be discarded when the maximum number of MAC address learned is exceeded.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#interface GigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)#max-dynamic-mac-count 100
Ruijie(config-if-GigabitEthernet 0/1)#max-dynamic-mac-count exceed-action discard
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

4.10 show mac-address-learning

Use this command to display the MAC address learning.

show mac-address-learning

Parameter Description	Parameter	Description
	N/A	N/A

Defaults N/A

Command Mode All mode

Usage Guide N/A

Configuration Examples The following example displays the port learning capability:

```
Ruijie(config)#show mac-address-learning
GigabitEthernet 0/0      learning ability: disable
GigabitEthernet 0/1      learning ability: enable
GigabitEthernet 0/2      learning ability: enable
GigabitEthernet 0/3      learning ability: enable
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

4.11 show mac-address-table

Use this command to display all types of MAC addresses (including dynamic address, static address

and filter address).

show mac-address-table [**address** *mac-addr*] [**interface** *interface-id*] [**vlan** *vlan-id*]

Parameter Description

Parameter	Description
address *mac-addr*	The MAC address.
interface *interface-id*	The Interface ID.
vlan *vlan-id*	The VLAN ID, in the range from 1 to 4094.

Defaults N/A

Command Mode All modes

Usage Guide In Type, STATIC indicates static address, DYNAMIC indicates dynamic address, FILTER indicates filter address, OTHER indicates user addresses that have been successfully authenticated (including 1x, mab and web authentication)

Configuration Examples The following example displays the MAC address.

```
Ruijie# show mac-address-table address 00d0.f800.1001
Vlan       MAC Address         Type    Interface
-------    ------------      --------   --------
1          00d0.f800.1001      STATIC  GigabitEthernet 1/1
Ruijie# show mac-address-table
Vlan       MAC Address         Type    Interface
-------    ------------      --------   --------
1          00d0.f800.1001      STATIC  GigabitEthernet 1/1
1          00d0.f800.1002      DYNAMIC GigabitEthernet 1/1
1          00d0.f800.1003      OTHER   GigabitEthernet 1/1
1          00d0.f800.1004      FILTER
```

Field	Description
Vlan	The interface address.
MAC Address	The MAC address.
Type	The MAC address type.
Interface	The interface corresponding to the MAC address.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.12 show mac-address-table aging-time

Use this command to display the aging time of the dynamic MAC address.

show mac-address-table aging-time

Parameter Description	Parameter	Description
	N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the aging time of the dynamic MAC address.

```
Ruijie# show mac-address-table aging-time
Aging time  : 300
```

Related Commands	Command	Description
	mac-address-table aging-time	Sets the aging time of the dynamic MAC address.

Platform Description N/A

4.13 show mac-address-table count

Use this command to display the number of address entries in the address table.

show mac-address-table count [**interface** *interface-id* **| vlan** *vlan-id*]

Parameter Description	Parameter	Description
	interface *interface-id*	Interface ID
	vlan *vlan-id*	VLAN ID, in the range from 1 to 4094.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide The **show mac-address-table count** command is used to display the number of entries based on the type of MAC address entry.

The **show mac-address-table count interface** command is used to display the number of entries based on the interface associated with the MAC address entry.

The **show mac-address-table count vlan** command is used to display the number of entries based on the VLAN of MAC address entries.

Configuration Examples

The following example displays the number of MAC address entries.

```
Ruijie# show mac-address-table count
Dynamic Address Count : 51
Static Address Count : 0
Filter Address Count : 0
Total Mac Addresses  : 51
```

Total Mac Address Space Available: 8139The following example displays the number of MAC address in VLAN 1.

```
Ruijie# show mac-address-table count vlan 1
Dynamic Address Count : 7
Static Address Count : 0
Filter Address Count : 0
Total Mac Addresses   : 7
```

The following example displays the number of MAC addresses on interface g0/1.

```
Ruijie# show mac-address-table interface g0/1
Dynamic Address Count : 10
Static Address Count : 0
Filter Address Count : 0
Total Mac Addresses   : 10
```

Field	Discription
Dynamic Address Count	Number of dynamic addresses
Static Address Count	Number of static addresses
Filter Address Count	Number of filter addresses
Tot l M c Addresses	Number of total MAC addresses

Related Commands

Command	Description
show mac-address-table static	Displays the static address.
show mac-address-table filtering	Displays the filtering address.
show mac-address-table dynamic	Displays the dynamic address.
show mac-address-table address	Displays all the address information of the specified address.
show mac-address-table interface	Displays all the address information of the specified interface.
show mac-address-table vlan	Displays all the address information of the specified vlan.

Platform Description

N/A

4.14 show mac-address-table dynamic

Use this command to display the dynamic MAC address.

show mac-address-table dynamic [**address** *mac-add r*] [**interface** *interface-id*] [**vlan** *vlan-id*]

Parameter Description

Parameter	Description
mac-addr	Destination MAC address of the entry
vlan-id	VLAN of the entry, in the range from 1 to 4094.
interface-id	Interface that the packet is forwarded to. It may be a physical port or an aggregate port

Defaults All the MAC addresses are displayed by default.

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the dynamic MAC address.

```
Ruijie# show mac-address-table dynamic
Vlan   MAC Address     Type   Interface
------------------------- -------- --------------------
1   0000.0000.0001    DYNAMIC gigabitethernet 1/1
1   0001.960c.a740    DYNAMIC gigabitethernet 1/1
1   0007.95c7.dff9    DYNAMIC gigabitethernet 1/1
1   0007.95cf.eee0    DYNAMIC gigabitethernet 1/1
1   0007.95cf.f41f    DYNAMIC gigabitethernet 1/1
1   0009.b715.d400    DYNAMIC gigabitethernet 1/1
1   0050.bade.63c4    DYNAMIC gigabitethernet 1/1
```

Related Commands

Command	Description
clear mac-address-table dynamic	Clears the dynamic MAC address.

Platform Description N/A

4.15 show mac-address-table filtering

Use this command to display the filtering MAC address.

show mac-address-table filtering [**ddr** *mac-addr*] [**vlan** *vlan-Id*]

Parameter Description

Parameter	Description
mac-addr	Destination MAC address of the entry

vlan-id	VLAN ID of the entry, in the range from 1 to 4094.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the filtering MAC address.

```
Ruijie# show mac-address-table filtering
Vlan    MAC Address    Type   Interface
------- ----------------- ------- -----------
 1    0000.2222.2222   FILTER Not available
```

Related Commands

Command	Description
mac-address-table filtering	Configures the filtering MAC address.

Platform Description N/A

4.16 show mac-address-table flapping record

Use this command to display the MAC address flapping record.

show mac-address-table flapping record

Parameter Description

Parameter	Description

Defaults 2

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the MAC address flapping record.

```
Ruijie# show mac-address-table flapping record
 Mac address flapping detect status      : on
 Mac address flapping detect interval    : 1s
 Mac address flapping syslog supress time : 1800s
 Mac address flapping record max count    : 300
 Mac address flapping record total count  : 5
```

```
 Move-Time                VLAN   MAC-Address     Original-Port    Move-Ports
Status
 -------------------- ----- -------------- --------------- ---------------
-------
 2018.11.14  12:10:46    1       0001.1111.1111  Te0/2               Te0/1
Normal
 2018.11.14  12:10:58    1       0001.1111.1111  Te0/1               Te0/2
Normal
 2018.11.14  12:11:1     1       0001.1111.1111  Te0/2               Te0/1
Normal
 2018.11.14  12:11:11    1       0001.1111.1111  Te0/1               Te0/2
Normal
 2018.11.14  12:11:13    1       0001.1111.1111  Te0/2               Te0/1
Normal
```

Field	Description
Move-Time	Flapping time
VLAN	VLAN of the MAC address
MAC-Address	MAC address
Original-Port	Interfaces that learn the MAC address before address flapping
Move-Ports	Interfaces that learn the MAC address after address flapping
Status	Currently effective flapping protection policies: Normal: not set ERR-DOWN: shutdown the interface

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.17 show mac-address-table max-dynamic-mac-count

Use this command to display the maximum number of dynamic MAC addresses learned on the VLAN or interface.

show mac-address-table max-dynamic-mac-count { **vlan** [*vlan-id*] | **interface** [*interface-id*] }

Parameter Description

Parameter	Description
vlan	Displays the dynamic MAC address learned on all VLANs

	which are configured with the maximum number of dynamic MAC address learning.
vlan-id	Displays the dynamic MAC address learned on the specified VLAN.
interface	Displays the dynamic MAC address learned on all interfaces which are configured with the maximum number of dynamic MAC address learning.
interface-id	Displays the dynamic MAC address learned on the specified interface.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the MAC address learned on all VLANs which are configured with the maximum number of dynamic MAC addresses.

```
Ruijie#show mac-address-table max-dynamic-mac-count vlan
Vlan Limit   MAC count Learning
---- ------- --------- --------
1    160       6        YES
```

The following example displays the MAC address learned dynamically on the specified VLAN.

```
Ruijie#show mac-address-table max-dynamic-mac-count vlan 1
Vlan Limit   MAC count Learning
---- ------- --------- --------
1    160        6         YES
```

Field	Description
Vlan	The VLAN ID.
Limit	The maximum number of MAC addresses.
MAC count	The number of MAC address learned dynamically on the VLAN.
Learning	Whether MAC address learning is disabled on the VLAN.

The following example displays the MAC address learned on all interfaces which are configured with the maximum number of the dynamic MAC address.

```
Ruijie#show mac-address-table max-dynamic-mac-count interface
Interface             Limit   MAC count Learning
----------------------- ------- --------- --------
GigabitEthernet 0/1      160      6          YES
```

The following example displays the MAC address learned dynamically on the specified interface.

```
Ruijie#show mac-address-table max-dynamic-mac-count interface
GigabitEthernet 0/1
```

```
Interface             Limit   MAC count Learning
----------------------- ------- --------- --------
GigabitEthernet 0/1     160     6         YES
```

Field	Description
Interface	The Interface ID
Limit	The maximum number of MAC addresses.
MAC count	The number of MAC address learned dynamically on the interface.
Learning	Whether MAC address learning is disabled on the interface

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.18 show mac-address-table interface

Use this command to display all the MAC addresses on the specified interface including static and dynamic MAC address

show mac-address-table interface [*interface-id*] [**vlan** *vlan-id*]

Parameter Description

Parameter	Description
interface-id	Displays the MAC address information of the specified Interface (physical interface or aggregate port).
vlan-id	VLAN ID of the entry, in the range from 1 to 4094..

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays all the MAC addresses on interface gigabitethernet 1/1.

```
Ruijie# show mac-address-table interface
gigabitethernet 1/1
Vlan  MAC Address  Type   Interface
----- ------------- -------- ----------------
1   00d0.f800.1001 STATIC  gigabitethernet 1/1
1   00d0.f800.1002 STATIC  gigabitethernet 1/1
1   00d0.f800.1003 STATIC  gigabitethernet 1/1
```

```
1   00d0.f800.1004 STATIC  gigabitethernet 1/1
```

Related Commands

Command	Description
show mac-address-table static	Displays the static MAC address.
show mac-address-table filtering	Displays the filtering MAC address.
show mac-address-table dynamic	Displays the dynamic MAC address.
show mac-address-table address	Displays all types of MAC addresses.
show mac-address-table vlan	Displays all types of MAC addresses of the specified VLAN.
show mac-address-table count	Displays the address counts in the MAC address table.

Platform Description N/A

4.19 show mac-address-table notification

Use this command to display the MAC address notification configuration and the MAC address notification table.

show mac-address-table notification [**interface** [*interface-id*] | **history**]

Parameter Description

Parameter	Description
interface	Displays the MAC address notification configuration on all interfaces.
interface *interface-id*	Displays the MAC address notification configuration on a specific interface.
history	Displays the MAC address notification history.

Defaults The MAC address notification configuration is displayed by default.

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the MAC address notification configuration and the MAC address notification table.

```
Ruijie# show mac-address-table notification interface
Interface    MAC Added Trap MAC Removed Trap
---------    --------------   --------------
GigabitEthernet1/14  Disabled    Disabled
Ruijie# show mac-address-table notification
MAC Notification Feature: Disabled
Interval between Notification Traps: 1 secs
Maximum Number of entries configured in History Table:1
```

```
Current History Table Length: 0
Ruijie# show mac-address-table notification history
History Index: 0
MAC Changed Message:
Operation:ADD Vlan: 1 MAC Addr: 00f8.d012.3456 GigabitEthernet 3/1
```

Related Commands

Command	Description
mac-address-table notification	Enables MAC address notification.
snmp trap mac-notification	Enables the MAC address trap notification function on the specified interface.

Platform Description N/A

4.20 show mac-address-table static

Use this command to display the static MAC address.

show mac-address-table static [**addr** *mac-add r*] [**interface** *interface-Id*] [**vlan** *vlan-id*]

Parameter Description

Parameter	Description
mac-addr	Destination MAC address of the entry
vlan-id	VLAN ID of the entry, within the range from 1 to 4094.
interface-id	Interface of the entry physical interface or aggregate port

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the static MAC addresses

```
Ruijie# show mac-address-table static
Vlan    MAC Address     Type   Interface
---------- -------------------- -------- ---------
1  00d0.f800.1001  STATIC  gigabitethernet 1/1
1  00d0.f800.1002  STATIC  gigabitethernet 1/1
1  00d0.f800.1003  STATIC  gigabitethernet 1/1
```

Related Commands

Command	Description
mac-address-table static	Configures the static MAC address.

Platform N/A

Description

4.21 show mac-address-table vlan

Use this command to display all addresses of the specified VLAN.

show mac-address-table vlan [*vlan-id*]

Parameter Description	**Parameter**	**Description**
	vlan-id	VLAN ID of the entry, within the range from 1 to 4094.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays all addresses of the specified VLAN.

```
Ruijie# show mac-address-table vlan 1
Vlan  MAC Address    Type    Interface
----- -------------  ------- ------------------
1   00d0.f800.1001  STATIC  gigabitethernet 1/1
1   00d0.f800.1002  STATIC  gigabitethernet 1/1
1   00d0.f800.1003  STATIC  gigabitethernet 1/1
```

Related Commands	**Command**	**Description**
	show mac-address-table static	Displays static addresses.
	show mac-address-table filtering	Displays filtered addresses.
	show mac-address-table dynamic	Displays dynamic addresses.
	show mac-address-table address	Displays all address information about the specified address.
	show mac-address-table interface	Displays all address information about the specified interface.
	show mac-address-table count	Displays the number of addresses in the address table.

Platform Description N/A

4.22 snmp trap mac-notification

Use this command to enable the MAC address trap notification on the specified interface. Use The **no** form of the command to restore the default setting.

snmp trap mac-notification { **added** | **removed** }

no snmp trap mac-notification { **added** | **removed** }

Parameter Description

Parameter	Description
added	Notifies when a MAC address is added.
removed	Notifies when a MAC address is removed

Defaults This function is disabled by default.

Command Mode Interface configuration mode.

Usage Guide Use **show mac-address-table notification interface** to display configuration.

Configuration Examples The following example enables the MAC address trap notification on interface gigabitethernet 1/1.

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# snmp trap mac-notification added
```

Related Commands

Command	Description
mac-address-table notification	Enables MAC address notification.
show mac-address-table notification	Displays the MAC address notification configuration and the MAC address notification table.

Platform Description N/A

4.23 aggregateport-admin vlan

Use this command to manage VLAN through an AP port. Use The **no** or **default** form of the command to restore the default setting.
aggregateport-admin vlan *vlan-list*
no aggregateport-admin vlan *vlan-list*
default aggregateport-admin vlan *vlan-list*

Parameter Description

Parameter	Description
vlan-list	Specifies the VLAN list.

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide When an AP port receives VLAN management packets, they are processed as management packets.

The other packets are processed as data packets.

Configuration Examples The following example manages VLAN through an AP port.

```
Ruijie(config)# aggregateport-admin vlan 1-20
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.24 mac-address-table flapping-logging

Use this command to enable MAC-flapping logging Use the **no** or **default** form of this command to restore the default setting.

mac-address-table flapping-logging

no/default mac-address-table flapping-logging

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide Use this command to enable logging for MAC-flapping among different ports within a VLAN.

Configuration Examples The following example enables MAC-flapping logging.

```
Ruijie# configure terminal
Ruijie(config)# mac-address-table flapping-logging
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.25 mac-address-table flapping action

Use this command to enable MAC-flapping protection. Use the **no** or **default** form of this command to disable this function.

mac-address-table flapping action [**error-down | priority** *priotiry-num*]

no mac-address-table flapping action [error-down | priority]
default mac-address-table flapping action [error-down | priority]

Parameter Description

Parameter	Description
error-down	Indicates port shutdown upon MAC-flapping
priority *priotiry-num*	Indicates the **error-down** priority, in the range from 0 to 5. Greater the value, higher the priority.

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide You must configure the MAC-flapping logging function before enabling MAC-flapping protection. When the command **default interface** is run in global configuration mode, if there is any layer-2 sub-interface, the MAC address learning cannot restore the default settings.

Configuration Examples The following example enables MAC-flapping logging.

```
Ruijie# configure terminal
Ruijie(config)# mac-address-table flapping-logging
```

The following example enables MAC-flapping protection.

```
Ruijie(config)# interface GigabitEthernet 1/1
Ruijie(config-if-GigabitEthernet 1/1)# mac-address-table flapping action
   error-down
Ruijie(config-if-GigabitEthernet 1/1)# mac-address-table flapping action
   priority 2
```

Related Commands

Command	Description
show running-config interface	Displays the port configuration

Platform Description N/A

5 Aggregate Port Commands

5.1 aggregate bfd-detect

Use this command to enable BFD on the AP port. Use the **no** form of this command to restore the default setting.

aggregate bfd-detect { **ipv4** | **ipv6** } *src_ip dst_ip*

no aggregate bfd-detect { **ipv4** | **ipv6** }

Parameter Description

Parameter	Description
ipv4	Enables IPv4 BFD when the AP port is configured with an IPv4 address.
src_ip	Specifies source IP address, namely, the IP address configured on the AP port.
dst_ip	Specifies destination IP address, namely, the IP address configured on the peer AP port.

Defaults This function is disabled by default.

Command Mode AP interface configuration mode

Usage Guide 1. If you want to enable BFD on the AP port, you should see corresponding configuration guide for BFD parameter settings.

2. Different products vary in support for IPv4/IPv6 BFD on AP port.

3. If an AP port supports both IPv4 and IPv6 BFD, it is allowed to enable both IPv4 and IPv6 BFD at the same time.

Note: If an AP port is enabled with BFD, its member ports in forwarding state create BFD session automatically.

Configuration Examples The following example enables BFD on the AP port.

```
Switch(config)# interface aggregateport 3
Switch(config-if-Aggregateport 3)# ip address 1.0.0.1
Switch(config-if-Aggregateport 3)# aggregate bfd-detect ipv4 1.0.0.1 1.0.0.2
Switch(config-if-Aggregateport 3)# bfd interval 50 min_rx 50 multiplier 3
```

Related Commands

Command	Description
show running	Displays the configuration
show interface aggregateport	Displays BFD on member ports in the current

	AP

Prompt When the source/destination ID is invalid:

```
1.% Invalid IP address.
```

5.2 aggregateport algorithm mode

Use this command to configure traffic balance algorithm mode on AP. Use the **no** form of this command to restore the default setting.

aggregateport algorithm mode *number*

no aggregateport algorithm mode

Parameter Description

Parameter	Description
number	Indicates algorithm mode.

Defaults The default mode varies from product. Run command ***show aggregateport load-balance*** to check the default setting.

Command Mode Global configuration mode

Usage Guide Optional. Perform this operation when traffic changes to keep traffic balance.

Configuration Examples The following example configures traffic balance algorithm mode to 3.

```
Ruijie# configure terminal

Ruijie(config)# aggregateport algorithm mode 3
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.3 aggregateport capacity mode

Use this command to configure the AP capacity mode. Use the **no** form of this command to restore the default setting, Use the **no** form of this command to restore the default setting,

aggregateport capacity mode *capacity-mode*

no aggregateport capacity mode

Parameter Description

Parameter	Description
capacity-mode	Configures the capacity mode.

Defaults The default *capacity-mode* varies with the device.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example configures the the capacity mode.

```
Ruijie# configure terminal
Ruijie(config)# aggregateport capacity mode 256*8
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.4 aggregateport hash-header

Use this command to specify the balancing factor acquisition mode for specific tunnel packets. Use the **default** form of this command to restore the default settings.

aggregateport hash-header {inner | outer | inner-outer}

default aggregateport hash-header

Parameter Description

Parameter	Description
inner	Specifies the inner layer in the header of tunnel packets as the source for acquiring the balancing factor.
outer	Specifies the outer layer in the header of tunnel packets as the source for acquiring the balancing factor.

Defaults The default configuration varies with products.

Command Mode Global configuration mode

Usage Guide Optional. When performing load balancing, use this command to specify the balancing factor acquisition mode for specific tunnel packets, to optimize traffic balancing.

The supported configuration options and types of tunnel packets vary with products. S6500 and S6250 series products support the **outer** configuration.

Configuration Examples The following example specifies the inner layer in the header of tunnel packets as the source for acquiring the balancing factor in global configuration mode.

```
Ruijie# configure terminal
Ruijie(config)# aggregateport hash-header inner
```

Related Commands

Command	Description
show running	Displays the configuration

Platform Description N/A

5.5 aggregateport load-balance

Use this command to configure a global load-balance algorithm for aggregate ports or a load-balance algorithm for an aggregate port . Use the **no** form of this command to return the default setting.

aggregateport load-balance { **dst-mac | src-mac | src-dst-mac | dst-ip | src-ip | src-dst-ip** | **src-dst-ip-l4port** | **enhanced profile** *profile-name* }

no aggregateport load-balance

Parameter Description

Parameter	Description
dst-mac	Load balance based on the destination MAC addresses of the incoming packets. For all the links of an aggregate port, the messages with the same destination MAC addresses are sent to the same port, and those with different destination MAC addresses are sent to different ports.
src-mac	Load balance based on the source MAC addresses of the incoming packets. For all the links of an aggregate port, the messages from different addresses are distributed to different ports, and those from the same addresses are distributed to the same port.
src-dst-ip	Load balance based on the source IP address and destination IP address. Packets with different source and destination IP address pairs are forwarded through different ports. The packets with the same source and destination IP address pairs are forwarded through the same links. At layer 3, this load balancing style is recommended.
dst-ip	Load balance based on the destination IP addresses of the incoming packets. For all the links of an aggregate port, the messages with the same destination IP addresses are sent to the same port, and those with different destination IP addresses are sent to different ports.
src-ip	Load balance based on the source IP addresses of the incoming packets. For all the links of an aggregate port, the messages from different addresses are

	distributed to different ports, and those from the same addresses are distributed to the same port.
src-dst-mac	Load balance based on the source and destination MAC addresses. Packets with different source and destination MAC address pairs are forwarded through different ports. The packets with the same source and destination MAC address pairs are forwarded through the same port.
src-dst-ip-l4port	Load balance based on the source IP address, destination IP address, L4 source port number and L4 destination port number.
enhanced profile	Load balance based on the packet type

Defaults The default load balance mode is **src-dst-mac** for the L2 AP port and **src-dst-ip** for the L3 AP port . For the CB-card-loaded device supporting enhanced profile, load is balanced over AP according to packet type based the enhanced profile.

Command Mode Global configuration mode/Interface configuration mode

Usage Guide You can run aggregateport load-balance in interface configuration mode of an AP port on devices that support load balancing configuration on a specific AP port. The configuration in interface configuration mode prevails. To disable the load balancing algorithm, run no aggregateport load-balance in interface configuration mode of the AP port. After that, the load balancing algorithm configured in global configuration mode takes effect.

Configuration Examples The following example configures a load-balance algorithm globally based on the destination MAC address.

```
Ruijie(config)# aggregateport load-balance dst-mac
```

The following example configures a load-balance algorithm on AP 1 port based on the destination MAC address.

```
Ruijie(config)# interface aggregateport 1
Ruijie(config-if-AggregatePort 1)# aggregateport load-balance dst-mac
```

Related Commands

Command	Description
show aggregateport load-balance	Displays aggregate port configuration.

Platform Description N/A

5.6 member linktrap

Use this command to send LinkTrap to aggregate port members. Use the **no** form of this command to restore the default setting.

aggregateport member linktrap
no aggregateport member linktrap

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide This function cannot be enabled by running the **snmp trap link-status** command in interface configuration mode.

Configuration Examples The following example enables the LinkTrap function on the aggregate port members.

```
Ruijie# configure terminal
Ruijie(config)# aggregateport member linktrap
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.7 aggregateport member minimum

Use this command to set the minimum number of AP member ports. Use the **no** form of this command to restore the default setting.
aggregateport member minimum *number*
no aggregateport member minimum *number*
Use this command to set actions for the minimum AP member ports. Use the **no** form of this command to restore the default setting.
aggregateport member minimum action {shutdown}

Parameter Description

Parameter	Description
number	The minimum number of AP member ports
shutdown	Shutdown AP to enable action.

Defaults The default is 1. No action is set.

Command Mode Interface configuration mode

Usage Guide Optional. For static AP, its peer end also has to apply the function.

Configuration Examples The following example sets the minimum number of AP member ports to 2.

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# port-group 1 mode active
Ruijie(config-if-GigabitEthernet 0/1)# aggregateport minimum member 2
Ruijie(config-if-GigabitEthernet 0/1)# end
Ruijie# show interface aggregateport 1
…
Aggregate Port Informations:
        Aggregate Number: 1
        Name: "AggregatePort 1"
        Members: (count=1)        GigabitEthernet 0/1         Link Status: Up    Lacp
Status: susp  …
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.8 aggregate port primary-port

Use this command to configure the AP member port as a primary port. Use the **no** form of this command to restore the default setting.

aggregateport primary-port

no aggregateport primary-port

Parameter Description

Parameter	Description
N/A	N/A

Defaults The AP member port is not a primary port by default.

Command Mode Interface configuration mode

Usage Guide Only one primary port can be configured for an aggregate port.

Configuration Examples The following example configures GigabitEthernet 0/1 as a primary port.

```
Ruijie(config)# interface GigabitEthernet 0/1
```

```
Ruijie(config-if-GigabitEthernet 0/1)# port-group 1 mode active
Ruijie(config-if-GigabitEthernet 0/1)# aggregateport primary-port
Ruijie(config-if-GigabitEthernet 0/1)# end
Ruijie# show interface aggregateport 1
  …
  Aggregate Port Informations:
       Aggregate Number: 1
       Name: "AggregatePort 1"
       Members: (count=1)
       Primary Port: GigabitEthernet 0/1
       GigabitEthernet 0/1        Link Status: Up    Lacp Status: bndl
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.9 clear lacp counters

Use this command to clear the statistics of LACP packets on a LACP member port.

clear lacp counters [*key-number* | *interface-type interface-number*]

Parameter Description

Parameter	Description
key-name	Specifies the LACP AP number.
interface-type	Specifies the type of a LACP member port.
interface-number	Specifies the number of a LACP member port.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Use the **show lacp counters** command in the privileged EXEC mode to check the statistics of LACP packets, and the **clear lacp counters** command to reset the statistics.
If no ports are specifies, the statistics of LACP packets on all LACP member ports is cleared.

Configuration Examples The following example clears the statistics of LACP packets on tenGigabitEthernet 0/2.

```
Ruijie# clear lacp counters tenGigabitEthernet 0/2
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.10 fcoe field

Use this command to set the load balance mode of FCOE packets for the specified template. Use the **no** form of this command to restore the default setting.

fcoe field [**vlan**] [**src-port**] [**dst-port**] [**src-id**] [**dst-id**] [**rx-id**] [**ox-id**] [**fabric-id**]

no fcoe field

Parameter Description

Parameter	Description
vlan	Load balance based on VLAN ID of FCOE packets.
src-port	Load balance based on the source port number of FCOE packets.
dst-port	Load balance based on the destination port number of FCOE packets.
src-id	Load balance based on the source ID of FCOE packets.
dst-id	Load balance based on the destination ID of FCOE packets.
rx-id	Load balance based on the Responder Exchange ID of FCOE packets.
ox-id	Load balance based on the Originator Exchange ID of FCOE packets.
fabric-id	Load balance based on the Fabric ID of the FC network of FCOE packets..

Defaults The default load balance mode is **src-id**, **dst-id** and **ox-id**.

Command Mode Enhanced template configuration mode

Usage Guide The enhance template should be configured first.

Configuration Examples The following example sets the load balance mode for FCOE packets to **src-id** and **src-port**.

```
Ruijie(config)# load-balance-profile apl
Ruijie(config-load-balance-profile)# fcoe field src-id src-port
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.11 hash-disturb

Use this command to configure HASH disturbance. Use the **no** form of this command to restore the default setting.

hash-disturb { *string* | { [seed *seed_value*] [offset *offset*] } }
no hash-disturb

Parameter Description

Parameter	Description
string	String of HASH disturbance.
seed_value	Seed value of HASH disturbance.
offset	Offset value of HASH disturbance.

Defaults This function is disabled by default.

Command Mode Enhanced template configuration mode

Usage Guide You can configure this function if you want to balance packets of the same type among multiple devices of the same type.
To configure HASH disturbance, you can run either the **hash-disturb** *string* command.

S6500 and S6250 series products support the both disturbance configuration.

Configuration Examples The following example configures the string of HASH disturbance.

```
Ruijie# configure terminal
Ruijie(config)#load-balance-profile default
Ruijie(config-load-balance-profile)#
Ruijie(config-load-balance-profile)#hash-disturb A
Ruijie(config-load-balance-profile)#
```

The following example sets the seed value to 196609 and offset to 99.

```
Ruijie# configure terminal
Ruijie(config)# load-balance-profile default
Ruijie(config-load-balance-profile)# no hash-disturb
Ruijie(config-load-balance-profile)# hash-disturb seed 196609 offset 99
Ruijie(config-load-balance-profile)#
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.12 hash-symmetrical

Use this command to configure HASH symmetry. Use the **no** form of this command to restore the default settings.

hash-symmetrical {ipv4 | ipv6 | fcoe}
no hash-symmetrical {ipv4 | ipv6 | fcoe}

Parameter Description

Parameter	Description
ipv4	Configures HASH symmetry for IPv4 packets.
Ipv6	Configures HASH symmetry for IPv6 packets.
fcoe	Configures HASH symmetry for FCoE packets.

Defaults The default settings vary according to different products.

Command Mode Enhanced template configuration mode

Usage Guide Optional. Use the **hash-symmetrical {ipv4 | ipv6 | fcoe }** command to specify a link for both the uplink and downlink traffic of packets of the same type. Use the **no hash-symmetrical {ipv4 | ipv6 | fcoe }** command to disable this function.

Configuration Examples The following example disables HASH symmetry for IPv6 and FCoE packets.

```
Ruijie# configure terminal
Ruijie(config)#load-balance-profile
Ruijie(config-load-balance-profile)#
Ruijie(config-load-balance-profile)#no hash-symmetrical ipv6
Ruijie(config-load-balance-profile)#no hash-symmetrical fcoe
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.13 interfaces aggregateport

Use this command to create the aggregate port or enter interface configuration mode of the aggregate port. Use the **no** form of this command to restore the default setting.
interfaces aggregateport *ap-number*
no interfaces aggregateport *ap-number*

Parameter Description

Parameter	Description
ap-number	Aggregate port number.

Defaults The aggregate port is not created by default.

Command Mode Global configuration mode

Usage Guide If the aggregate port is created, this command is used to enter the interface configuration mode. Otherwise, this command is used to create the aggregate port and then enter its interface configuration mode.

Configuration Examples The following example creates AP 5 and enters its interface configuration mode.

```
Ruijie# configure terminal
Ruijie(config)# interfaces aggregateport 5
Ruijie(config-if-Aggregateport 5)# end
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.14 ipv4 field

Use this command to configure the IPv4 load balance mode for a specified profile. Use the **no** form of this command to restore the default setting.

ipv4 field [**src-ip**] [**dst-ip**] [**protocol**] [**l4-src-port**] [**l4-dst-port**] [**src-port**]

no ipv4 field

Parameter Description

Parameter	Description
src-ip	Load balance based on the source IP address of theIPv4 packet.
dst-ip	Load balance based on the destination IP address of the IPv4 packet.
protocol	Load balance based on the protocol type of the IPv4 packet.
l4-src-port	Load balance based on the L4 source port number of the IPv4 packet.
l4-dst-port	Load balance based on the L4 destination port number of the IPv4 packet.
src-port	Load balance based on the source port number of the IPv4 packet.

Defaults The default load balance mode is **src-ip** and **dst-ip**.

Command Mode Load balance profile configuration mode

Usage Guide You need to configure the load balance profile first.

Configuration Examples The following example sets the IPv4 load balance mode for profile apl to **src-ip**.

```
Ruijie# configure terminal
Ruijie(config)# load-balance-profile apl
```

```
Ruijie(config-load-balance-profile)# ipv4 field src-ip
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.15 ipv6 field

Use this command to configure the IPv6 load balance mode for a specified profile. Use the **no** form of this command to restore the default setting.

ipv6 field [**src-ip**] [**dst-ip**] [**protocol**] [**l4-src-port**] [**l4-dst-port**] [**src-port**]

no ipv6 field

Parameter Description

Parameter	Description
src-ip	Load balance based on the source IP addresses of the IPv6 packets.
dst-ip	Load balance based on the destination IP addresses of the IPv6 packets.
protocol	Load balance based on the protocol types of the IPv6 packets.
l4-src-port	Load balance based on the L4 source port numbers of the IPv6 packets.
l4-dst-port	Load balance based on the L4 destination port numbers of the IPv6 packets.
src-port	Load balance based on the source port numbers of the IPv6 packets.

Defaults The default load balance mode is **src-ip** and **dst-ip**.

Command Mode Load balance profile configuration mode

Usage Guide You need to configure the load balance profile first.

Configuration Examples The following example sets the load balance mode of IPv6 packets to **src-ip**.

```
Ruijie(config)# load-balance-profile apl
Ruijie(config-load-balance-profile)# ipv6 field src-ip
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.16 l2 field

Use this command to configure the load balance mode of L2 packets for a specified profile. Use the **no** form of this command to restore the default setting.

l2 field [**src-mac**] [**dst-mac**] [**l2-protocol**] [**src-port**]

no l2 field

Parameter Description

Parameter	Description
src-mac	Load balance based on the source MAC address of the L2 packet.
dst-mac	Load balance based on the destination MAC address of the L2 packets.
l2-protocol	Load balance based on the L2 protocol type of the L2 packet.
src-port	Load balance based on the source port number of the L2 packet.

Defaults The default load balance mode is **src-mac** and **dst-mac**.

Command Mode Load balance profile configuration mode

Usage Guide You need to configure the load balance profile first.

Configuration Examples The following example sets the load balance mode of L2 packets to **src-mac** and **src-prot**.

```
Ruijie(config)# load-balance-profile apl
Ruijie(config-load-balance-profile)# l2 field src-mac src-port
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.17 lacp device

Use this command to configure the device ID. Use the **no** form of this command to restore the default settings.

lacp device *number*

no lacp device

Parameter Description

Parameter	Description
number	Indicates the device ID of an aggregation group. The value ranges from **0** to **3**.

Defaults The LACP device ID is 0 by default.

Command Mode Interface configuration mode

Usage Guide (Optional) Configure the LACP device ID when LACP ports of multiple (a maximum of four) independent devices need to negotiate with the LACP port of a specific device. Configure the LACP device ID together with the LACP system ID.

Configuration Examples The following example sets the device ID of AP2 to 1.

```
Ruijie(config)#interface aggregatePort 2
Ruijie(config-if-AggregatePort 2)#lacp device 1
Ruijie(config-if-AggregatePort 2)#end
Ruijie#show lacp summary

System Id:32768, 0000.1236.54aa

Flags:  S - Device is requesting Slow LACPDUs   F - Device is requesting Fast LACPDUs.
A - Device is in active mode.        P - Device is in passive mode.

Aggregate port 2:

System Id: 0000.1236.54aa     Device num : 1

Local information:
                                    LACP port       Oper    Port    Port
Port           Flags     State      Priority        Key     Number  State
-------------------------------------------------------------------------
Te1/0/1        SA        down       32768           0x2     0x4001  0x45

Partner information:
                         LACP port                 Oper    Port     Port
Port           Flags     Priority      Dev ID      Key     Number   State
-------------------------------------------------------------------------
Te1/0/1        SP        0         0000.0000.0000   0x0     0x0      0x0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.18 lacp individual-port enable

Use this command to enable the LACP independent port function.

Use the **no** form of this command to restore the default setting.

lacp individual-port enable

no lacp individual-port enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, the LACP independent port function is disabled.

Command Mode Interface configuration mode

Usage Guide (Optional) Perform this operation when the LACP member port cannot perform LACP negotiation and need to be changed to a common physical port.

After this function is enabled, the member port becomes an independent port (a common physical port) if LACP negotiation fails because the port does not receive LACP packets from the peer end within the set time-out period.

Configuration Examples This example shows how to enable the independent port function for GigabitEthernet 0/1.

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# port-group 1 mode active
Ruijie(config-if-GigabitEthernet 0/1)# lacp individual enable
Ruijie(config-if-GigabitEthernet 0/1)# end
Ruijie# show interface aggregateport 1

Aggregate Port Informations:
        Aggregate Number: 1
        Name: "AggregatePort 1"
        Members: (count=1)
        Primary Port: GigabitEthernet 0/1
        GigabitEthernet 0/1         Link Status: Up    Lacp Status: individual  ...
```

Verification Run the **show running** command to check the configuration

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.19 lacp individual-timeout period

Use this command to set the time-out period of LACP independent port
lacp individual-timeout period *time*

Use the **no** form of this command to restore the default settings
no lacp individual-timeout period

Parameter Description

Parameter	Description
time	The range is 10-90, and the unit is second

Default Settings The time-out period of LACP independent port is 90s by default.

Command Mode Global configuration mode

Default Level 14

Usage Guide (Optional) Perform this operation when an LACP independent port needs to adjust the time-out period.
This command is used to configure the time-out period for the independent port, and only affects the interface enabling the LACP independent port.
The interface that has become an independent port will not be affected when the time-out period is configured.
The interface becomes an independent port (a common physical port) if it does not receive LACP packets from the peer end within the set time-out period.
In the long time-out mode, the LACP packet is sent every 30s. The time-out period should be longer than 30s so as not to affect the normal LACP negotiation. It is recommended to configure the time-out period at least twice the period of LACP packet sending.
In the short time-out period, there is no limit.

Configuration Examples The following example configures the time-out period of an independent port as 60s

```
Ruijie(config)# lacp individual-timeout period 60
```

Verification Run the **show running** command to check the configuration

5.20 lacp port-priority

Use this command to set the priority of the LACP AP member port. Use the **no** form of this command to restore the default setting.
lacp port-priority *port-priority*

no lacp port-priority

Parameter Description

Parameter	Description
port-priority	The LACP port priority, in the range from 0 to 65535.

Defaults The default is 32768.

Command Mode Interface configuration mode

Usage Guide N/A

Configuration Examples This example sets the LACP port priority of interface Gi0/1 to 4096.

```
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# lacp port-priority 4096
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.21 lacp short-timeout

Use this command to configure the short-timeout mode for the LACP AP member port. Use the no form of this command to restore the default setting.

lacp short-timeout

no lacp short-timeout

Parameter Description

Parameter	Description
N/A	N/A

Defaults The default is long-timeout mode.

Command Mode Interface configuration mode

Usage Guide In long-timeout mode, the port sends an LACP packet every 30 seconds. If the packet is not received in 90 seconds, the connection times out.

In short-timeout mode, the port sends an LACP packet every 1 second. If the packet is not received in

3 seconds, the connection times out.

Configuration Examples The following example configures the short-timeout mode for the LACP AP member port.

```
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# lacp short-timeout
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.22 lacp short-timeout period

Use this command to configure the timeout time of the LACP system in short timeout mode. Use the **no** form of this command to restore the default settings.

lacp short-timeout period *value*

no lacp short-timeout period

Parameter Description

Parameter	Description
value	Indicates the timeout time in short timeout mode. (Unit: second)

Defaults The default timeout time in LACP short timeout mode is 3 seconds.

Command Mode Global configuration mode

Usage Guide In global configuration mode, run the command to configure the timeout time in LACP short timeout mode.

Configuration Examples The following example configures the timeout time in LACP short timeout mode to 4 seconds.

```
Ruijie(config)# lacp short-timeout period 4
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.23 lacp system-id

Use this command to configure the LACP system ID. Use the **no** form of this command to restore the default setting.

lacp system-id *system-id*

no lacp system-id

Parameter Description

Parameter	Description
system-id	Indicates the system ID of an aggregation group. It must be a valid unicast MAC address.

Defaults The LACP system ID is the MAC address of device by default.

Command Mode Interface configuration mode

Usage Guide (Optional) Configure the LACP system ID when LACP ports of multiple (a maximum of four) independent devices need to negotiate with the LACP port of a specific device. Configure the LACP system ID together with the LACP device ID.

Configuration Examples The following example configures the LACP system ID to 0000.1236.54ab.

```
Ruijie(config)# interface aggregatePort 2
Ruijie(config-if-AggregatePort 2)#lacp system-id 0000.1236.54ab
Ruijie(config-if-AggregatePort 2)#end
Ruijie#show lacp summary

System Id:32768, 0000.1236.54aa

Flags:  S - Device is requesting Slow LACPDUs   F - Device is requesting Fast LACPDUs.
A - Device is in active mode.        P - Device is in passive mode.

Aggregate port 2:

System Id: 0000.1236.54ab     Device num : 1

Local information:
                                    LACP port       Oper    Port    Port
Port            Flags     State     Priority        Key     Number  State
--------------------------------------------------------------------------
Te1/0/1         SA        down      32768           0x2     0x4001  0x45

Partner information:
                          LACP port                 Oper    Port     Port
```

```
Port          Flags     Priority      Dev ID       Key     Number   State
-------------------------------------------------------------------------
Te1/0/1       SP        0          0000.0000.0000   0x0     0x0      0x0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.24 lacp system-priority

Use this command to set the priority of the LACP system. Use the **no** form of this command to restore the default settings.

lacp system-priority *port-priority*

no lacp system -priority

Parameter Description

Parameter	Description
system-priority	The LACP system priority, in the range from 0 to 65535.

Defaults The default value is 32768.

Command Mode Interface configuration mode

Usage Guide N/A

Configuration Examples This example sets the LACP system priority as 4096.

```
Ruijie(config)# lacp system-priority 4096
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.25 load-balance-profile

Use this command to rename a load balance enhanced profile and apply the profile. Use the **no** form of this command to restore the load balance configuration without changing the profile name. Use the **default** form of this command to restore the default settings.

load-balance-profile *profile-name*

no load-balance-profile *profile-name*

no load-balance-profile

Parameter Description

Parameter	Description
profile-name	Specifies the profile name, which contains up to 31 characters.

Defaults The default *profile-name* is default.

Command Mode Global configuration mode.

Usage Guide By default, the device is configured with an enhanced profile named default. Use the **load-balance-profile default** command to enter the enhanced profile configuration mode. You can change the profile name by using the **load-balance-profile** *profile-name* command.

Configuration Examples The following example creates a load balance profile named **apl**.

```
Ruijie(config)# load-balance-profile apl
Warning: The profile default has been used, and this command will rename it. Continue? [Y/N]:y
Ruijie(config-load-balance-profile)#
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.26 mpls field

Use this command to configure the load balance mode of MPLS packets in a specified load balance enhanced profile. Use the **no** form of this command to restore the default setting.

mpls field [**top-label**] [**2nd-label**] [**3rd-label**] [**src-ip**] [**dst-ip**] [**vlan**] [**src-port**] [dst-port] [src-mac] [dst-mac] [protocol] [l4-src-port] [**l4-dst-port**] [**l2-etype**]

no mpls field

Parameter Description

Parameter	Description
top-label	Load balance based on the destination top labels of the MPLS packets.

2nd-label	Load balance based on the destination second labels of the MPLS packets.
src-ip	Load balance based on the source IP addresses of the MPLS packets.
dst-ip	Load balance based on the destination IP addresses of the MPLS packets.
vlan	Load balance based on the VLANs of the MPLS packets.
src-port	Load balance based on the source port numbers of the MPLS packets.
3rd-label	Load balance based on the destination second labels of the MPLS packets
dst-port	Load balance based on the destination port of the MPLS packets.
src-mac	Load balance based on the source MAC address of the MPLS packets.
dst-mac	Load balance based on the destination MAC address of the MPLS packets.
protocol	Load balance based on the protocol type of the MPLS packets.
l4-src-port	Load balance based on the L4 source port number of the MPLS packets.
l4-dst-port	Load balance based on the L4 destination port number of the MPLS packets.
l2-etype	Load balance based on the Ethernet type of the MPLS packets.

Defaults The default load balance mode is **top-label** and **2nd-label**.

Command Mode Load balance enhanced profile configuration mode.

Usage Guide Use the **show load-balance-profile** command to display the load balance mode configuration.

Configuration Examples The following example sets the load balance mode of MPLS packets to **top-label** and **src-ip**.

```
Ruijie(config-load-balance-profile)# mpls field top-label src-ip
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.27 port-group

Use this command to assign a physical interface to be a member port of a static aggregate port or an LACP aggregate port. Use the **no** form of this command to restore the default setting.

port-group *port-group-number*

port-group *key-number* **mode** { **active** | **passive** }

no port-group

Parameter Description

Parameter	Description
port-group-number	Member group ID of an aggregate port, the interface number of the aggregate port.
key-number	Member group ID of an LACP aggregate port, the interface number of the LACP aggregate port.

active	Places a port into an active negotiating state, in which the port initiates negotiations with remote ports by sending LACP packets.
passive	Places a port into a passive negotiating state, in which the port responds to LACP packets it receives but does not initiate LACP negotiation.

Defaults By default, the physical port does not belong to any aggregate port.

Command Mode Interface configuration mode.

Usage Guide All the members of an aggregate port belong to a VLAN or configured to be trunk ports. The ports belonging to different native VLANs cannot form an aggregate port.

Configuration Examples The following example specifies the Ethernet interface 1/3 as a member of the static AP 3.

```
Ruijie(config)# interface gigabitethernet 1/3
Ruijie(config-if-GigabitEthernet 1/3)# port-group 3
```

The following example specifies the Ethernet interface 2/3 as a member of the LACP AP4 and set the aggregation mode to active.

```
Ruijie(config)# interface gigabitethernet 2/3
Ruijie(config-if-GigabitEthernet 2/3)# port-group 4 mode active
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.28 show aggregateport

Use this command to display the aggregate port configuration.

show aggregateport { [*aggregate-port-number*] **summary** | **load-balance** }

Parameter Description

Parameter	Description
aggregate-port-number	Number of the aggregate port.
load-balance	Displays the load-balance algorithm on the aggregate port.
summary	Displays the summary of the aggregate port.

Defaults N/A

Command Mode Any mode

Usage Guide If the aggregate port number is not specified, all the aggregate port information will be displayed.

Configuration Examples The following example displays the aggregate port configuration.

```
Ruijie# show aggregateport 1 summary
AggregatePort    MaxPorts              SwitchPort  Mode       Load  balance
Ports
-------------               ---------------       ----------        ------
---------------------------- ------------------------
Ag1                  8                      Enabled      ACCESS   dst-mac
Gi0/2
```

Field Interpretation

Field	Interpretation
AggregatePort	Indicates AP name.
MaxPorts	Indicates the maximum number of ports an AP can support.
SwitchPort	Indicates whether the AP is a switch port or not. “Enabled” indicates the AP is a switch port, while “Disabled” means the AP is not a switch port.
Mode	Indicates the AP Mode, which can be ACCESS, TRUNK, TUNNEL, HYBRID, UPLINK, HOST, or PROMIS. When the AP is not a switch port, nothing is displayed under this field.
Load balance	Indicates load balancing mode of the AP.
Ports	Indicates the name of an AP member.

The following example displays the configuration information of ***load-balance*** globally.

```
Ruijie#show aggregateport load-balance
Load-balance    : Source MAC and Destination MAC
Hash-elasticity : enable
Algorithm mode
current: 3, default: 0
```

Field Interpretation

Field	Interpretation
Load-balance	Indicates global load balancing mode.
Hash-elasticity	Indicates whether Hash elasticity is enabled.
Algorithm mode	Indicates Hash load-balancing algorithm mode.
Hash-disturb(Expert Mode)	Indicates the seed and offset values of Hash disturbance. Not all models are able to display this such information. “Current” stands for the current values, and “default” for the default ones.

Related Commands

Command	Description
aggregateport load-balance	Configures a load-balance algorithm of AP.

Platform Description N/A

5.29 show aggregateport capacity

Use this command to display the AP capacity mode and the AP number.

show aggregateport capacity

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Any mode

Usage Guide N/A

Configuration Examples The following example displays the AP capacity mode and the AP number.

```
Ruijie# show aggregateport capacity
AggregatePort Capacity Information:
Configuration Capacity Mode: 128*16.
Effective Capacity Mode   : 256*8.
Available Capacity        : 128*8.
Total Number: 128, Used: 1, Available: 127.
```

Field	Description
Configuration Capacity Mode	Capacity mode (takes effect after restart)
Effective Capacity Mode	Capacity mode currently taking effect
Available Capacity	Capacity mode currently available (Intersection of the configur capacity mode and effective capacity mode)
Total Number	The maximum AP available in the system

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.30 show lacp counters

Use this command to display the statistics of LACP packets on LACP member ports.

show lacp counters [*key-number*]

Parameter Description

Parameter	Description

key-name	Specifies an LACP member port.

Defaults N/A

Command Mode Any mode.

Usage Guide If no port is specified, the statistics of LACP packets on all LACP member ports is displayed.

Configuration Examples The following example displays the statistics of LACP packets on LACP AP port 2..

```
Ruijie(config)# show lacp counters 2

LACP PDU Pakcet Statistics

Aggregate port 2:
Port          InPkts    OutPkts
--------------------------------
Te0/2          6121      6132
```

Field	Description
Aggregate port *2*	Indicates the AP number.
Port	Indicates an LACP member port.
InPkts	Indicates the number of LACP PDU the member port receives.
OutPkts	Indicates the number of LACP PDU the member port sends.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.31 show lacp summary

Use this command to display the LACP aggregation information.

show lacp summary [*key*]

Parameter Description

Parameter	Description
key	Specifies the aggregation group id to show. If it is not specified, all

	aggregation group information is displayed by default.

Defaults N/A

Command Mode Any mode.

Usage Guide N/A

Configuration Examples The following example displays the LACP aggregation information.

```
Ruijie(config)# show lacp summary 3
System Id:32768, 00d0.f8fb.0002
Flags:  S - Device is requesting Slow LACPDUs
F - Device is requesting Fast LACPDUs.
A - Device is in active mode.       P - Device is in passive mode.
Aggregate port 3:
Local information:
                            LACP port      Oper    Port    Port
Port    Flags    State    Priority       Key    Number  State
---------------------------------------------------------------------
Gi0/1    SA       bndl       4096        0x3    0x1     0x3d
Gi0/2    SA       bndl       4096        0x3    0x2     0x3d
Gi0/3    SA       bndl       4096        0x3    0x3     0x3d
Partner information:
               LACP port               Oper    Port    Port
Port    Flags    Priority     Dev ID      Key    Number   State
---------------------------------------------------------------------
Gi0/1    SA       61440    00d0.f800.0002   0x3    0x1    0x3d
Gi0/2    SA       61440    00d0.f800.0002   0x3    0x2    0x3d
Gi0/3    SA       61440    00d0.f800.0002   0x3    0x3    0x3d
```

Field	Description
System Id	Displays the MAC address of the system.
Aggregate port 3	Displays the AP name.
Local information	Displays the local LACP information.
Port	Displays the system port ID.
Flags	Displays the port state flag: “S” indicates that the LACP is stable and in the state of periodically sending the LACPPDU; “A” indicates that the port is in the active mode.

State	Show the port aggregation information: “bndl” indicates that the port is aggregated; “Down” represents the disconnection port state; “susp” indicates that the port is not aggregated.
LACP Port Priority	Displays the LACP port priority.
Oper Key	Displays the port operation key.
Port Number	Displays the port number.
Port State	Displays the flag bit for the LACP port state.
Partner information	Partly displays the LACP information of the peer port.
Port	Displays the local port that is connected with the peer port.
Flags	Displays the peer port state flag: “S” indicates that the LACP is stable and in the state of periodically sending the LACPPDU; “A” indicates that the port is in the active mode.
LACP prot Priority	Displays priority of the peer LACP port.
Dev ID	Partly displays the system MAC information of the peer device.
Oper Key	Displays the operation key of the peer port.
Port Number	Displays the peer port number.
Port State	Displays the flag bit for state of the peer LACP port.

Related Commands

Command	Description
port-group *key* **mode**	Enables the LACP on the port and specifies the aggregation group ID and operation mode.

Platform Description N/A

5.32 show load-balance-profile

Use this command to display the enhanced profile.

show load-balance-profile [*profile-name*]

Parameter Description

Parameter	Description
profile-name	Specifies the profile name.

Defaults -

Command Mode Any mode.

Usage Guide All enhanced profiles are displayed if the profile name is not specified.

Configuration Examples The following example displays configuration information in profile **module0**.

```
Ruijie# show load-balance-profile  module0
Load-balance-profile: module0
Packet    Hash Field:
IPV4: src-ip dst-ip
IPV6: src-ip dst-ip
L2  : src-mac dst-mac vlan
MPLS: top-labe l2nd-label
```

Field	Interpretation
Load-balance-profile	Displays the enhanced profile name.
Aggregate port 3	Displays the AP name.
IPv4	Displays the load-balancing configuration of IPv4 packets in the enhanced profile.
IPv6	Displays the load-balancing configuration of IPv6 packets in the enhanced profile.
L2	Displays the load-balancing configuration of Layer2 packets in the enhanced profile.
MPLS	Displays the load-balancing configuration of MPLS packets in the enhanced profile.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6 VLAN Commands

6.1 add

Use this command to add one or a group Access interface into current VLAN. Use the **no** or **default** form of the command to remove the Access interface.

add interface { *interface-id* | **range** *interface-range* }

no add interface { *interface-id* | **range** *interface-range* }

default add interface { *interface-id* | **range** *interface-range* }

Parameter Description

Parameter	Description
interface-id	Layer-2 Ethernet interface or layer-2 AP port.
range *interface-range*	Range of the Layer-2 Ethernet interface or layer-2 AP port.

Defaults All layer-2 Ethernet interfaces are in the VLAN1.

Command mode VLAN configuration mode.

Usage Guide This command is only valid for the access port.

The configuration of this command is the same as specifying the VLAN to which interface belongs in the interface configuration mode (that is the **switchport access vlan** *vlan-id* command). For the two commands of adding the interface to the VLAN, the command configured later will overwrite the one configured before and take effect.

The configuration of adding the layer-2 AP into current VLAN through this command will only take effect for the layer-2 AP port, but not for the member port of the layer-2 AP port.

Configuration Examples The following example adds the interface GigabitEthernet 0/10 to VLAN20.

```
Ruijie# configure terminal
SwitchA(config)#vlan 20
SwitchA(config-vlan)#add interface GigabitEthernet 0/10
Ruijie# show interface GigabitEthernet 0/10 switchport
Interface  Switchport  Mode  Access  Native Protected  VLAN lists
---------- --------      -----  -----  ---- ---------- -------
GigabitEthernet 0/10 enabled  ACCESS  20   1   Disabled  ALL
```

The following example adds the interface range GigabitEthernet 0/1-10 to VLAN200.

```
Ruijie# configure terminal
SwitchA(config)#vlan 200
SwitchA(config-vlan)#add interface range GigabitEthernet 0/1-10
Ruijie# show vlan
```

```
SwitchA#show vlan
VLAN Name        Status                    Ports
---- -------    ------------    ----------------------------
1 VLAN0001    STATIC   Gi0/11,Gi0/12,Gi0/13,Gi0/14,Gi0/15,
Gi0/16,Gi0/17,Gi0/18,Gi0/19,Gi0/20,Gi0/21, Gi0/22, Gi0/23, Gi0/24
200 VLAN0200 STATIC  Gi0/1,Gi0/2,Gi0/3,Gi0/4,Gi0/5,
Gi0/6,Gi0/7,Gi0/8,Gi0/9,Gi0/10
```

The following example adds the AggregatePort10 to VLAN20.

```
Ruijie# configure terminal
SwitchA(config)#vlan 20
SwitchA(config-vlan)#add interface aggregateport 10
Ruijie# show interface aggregateport 10 switchport
Interface  Switchport   Mode  Access  Native Protected  VLAN lists
----------  --------      -----  -----  ---- ---------- -------
AggregatePort 10 enabled  ACCESS  20   1   Disabled  ALL
```

Related Commands

Command	Description
show interface *interface-id* **switchport**	Displays the layer-2 interfaces.

Platform Description N/A

6.2 name

Use this command to specify the name of a VLAN. Use the **no** or **default** form of this command to restore the default setting.

name *vlan-name*

no name

default name

Parameter Description

Parameter	Description
vlan-name	VLAN name

Defaults The default name of a VLAN is the combination of “VLAN” and VLAN ID, for example, the default name of the VLAN 2 is “VLAN0002”.

Command mode VLAN configuration Mode.

Usage Guide N/A

Configuration Examples

```
Ruijie(config)# vlan 10
Ruijie(config-vlan)# name vlan10
```

Related Commands

Command	Description
show vlan	Displays member ports of the VLAN.

Platform Description N/A

6.3 show vlan

Use this command to display member ports of the VLAN.

show vlan [**id** *vlan-id*]

Parameter Description

Parameter	Description
vlan-id	VLAN ID

Defaults N/A

Command mode All modes

Usage Guide To return to the privileged EXEC mode, input **end** or pressing **Ctrl+C**.
To return to the global configuration mode, input **exit**.

Configuration Examples

```
Ruijie# show vlan id 1
VLAN Name      Status    Ports
---------- ------------- ------------
1   VLAN0001        STATIC    Fa0/1, Fa0/2
```

Related Commands

Command	Description
name	VLAN name.
switchport access	Adds the interface to a VLAN.

Platform Description N/A

6.4 switchport access

Use this command to configure an interface as a static access port and assign it to a VLAN. Use the **no** form of the command to assign the port to the default VLAN.

switchport access vlan *vlan-id*

no switchport access vlan

Parameter Description

Parameter	Description
vlan-id	The VLAN ID at which the port to be added.

Defaults By default, the switch port is an access port and the VLAN is VLAN 1.

Command mode Interface configuration mode.

Usage Guide Enter one VLAN ID. The system will create a new one and add the interface to the VLAN if you enter a new VLAN ID. If the VLAN ID already exists, the command adds the port to the VLAN.
If the port is a trunk port, the operation does not take effect.

Configuration Examples

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# switchport access vlan 2
```

Related Commands

Command	Description
switchport mode	Specifies the interface as Layer 2 mode (switch port mode).
switchport trunk	Specifies a native VLAN and the allowed-VLAN list for the trunkport.

Platform Description N/A

6.5 switchport mode

Use this command to specify a L2 interface (switch port) mode. You can specify this interface to be an access port, trunk port, uplink port, servicechain port or an 802.1Q tunnel. Use the **no** form of this command to restore the default setting.

switchport mode { **access** | **trunk | hybrid | uplink | servicechain | ptrunk** }

no switchport mode

Parameter Description

Parameter	Description

access	Configures the switch port as an access port.
trunk	Configures the switch port as a trunk port.
hybrid	Configures the switch port as a hybrid port.
uplink	Configures the switch port as an uplink port.
servicechain	Configures the switch port as a servicechain port.
ptrunk	Configures the switch port as a ptrunk port.

Defaults By default, the switch port is an access port.

Command mode Interface configuration mode.

Usage Guide If a switch port is an access port, the port can be added only to one VLAN. You can run the **switchport access vlan** command to specify the VLAN to which the port belongs.
If a switch port is a trunk port, the port is added to all VLANs by default. You can also run the **switchport trunk allowed** command to add the port to or remove the port from a specified VLAN.
If a switch port is an uplink port, the port is added to all VLANs by default. Different from the trunk port, the uplink port sends packets with a tag carried, that is, the tag of packets from default VLANs will not be deleted. You can run the **switchport trunk allowed** command to add the port to or remove the port from a specified VLAN.
If a switch port is a hybrid port, the port is added to all VLANs by default. Different from a trunk port, a hybrid port can be added to a VLAN in tag or untag mode by running the **switchport hybrid allowed** command.
If a switch port is a servicechain port, the port does not need to learn MAC addresses and can forward packets from any VLAN. Note that before setting a switch port to a servicechain port, clear other configurations on the port and switches the port to an access port.
A ptrunk port is the same as a trunk port except that it only joins VLAN 1 by default. You can run the **switchport trunk allowed** command to add the port to or remove it from a specific VLAN.

Configuration Examples The following example configures port 1 as an access port.

```
Ruijie(config)#int g 0/1
Ruijie(config-if-GigabitEthernet 0/1)#switchport mode access
```

The following example configures port 1 as a trunk port.

```
Ruijie(config)#int g 0/1
Ruijie(config-if-GigabitEthernet 0/1)# switchport mode trunk
```

The following example configures port 1 as an uplink port.

```
Ruijie(config)#int g 0/1
Ruijie(config-if-GigabitEthernet 0/1)# switchport mode uplink
```

The following example configures port 1 as a hybrid port.

```
Ruijie(config)#int g 0/1
Ruijie(config-if-GigabitEthernet 0/1)# switchport mode hybrid
```

The following example configures port 1 as a servicechain port.

```
Ruijie(config)#default int g 0/1
```

```
Ruijie(config)#int g 0/1
Ruijie(config-if-GigabitEthernet 0/1)# switchport mode servicechain
```

The following example configures port 1 as a ptrunk port.

```
Ruijie(config)#default int g 0/1
Ruijie(config)#int g 0/1
Ruijie(config-if-GigabitEthernet 0/1)# switchport mode ptrunk
```

Related Commands

Command	Description
switchport access	Configures an interface as a statics access port and assigns it to a VLAN.
switchport trunk	Specifies a native VLAN and the allowed-VLAN list for the trunkport.

Platform Description N/A

6.6 switchport hybrid allowed

Use this command to add the port to the VLAN or remove the port from the VLAN, Use the **no** or **default** form of this command to restore the default setting.

switchport hybrid allowed vlan { { [**add** | **only**] **tagged** *vlist* | [**add**] **untagged** *vlist* } | **remove** *vlist* }

no switchport hybrid allowed vlan

default switchport hybrid allowed vlan

Parameter Description

Parameter	Description
add	Adds the port to the VLAN.
only	Adds the port to the VLAN and removes the port from the VLANs not on the VLAN list.
tagged	Adds the port to the VLAN and the VLAN packets going out on the port are tagged with VLAN ID.
untagged	Adds the port to the VLAN and the VLAN packets going out on the port are not tagged with VLAN ID.
remove	Removes the port from the VLAN.
vlist	Specifies the VLAN.

Defaults By default, the hybrid port is in all VLANs. All VLAN packets (except native VLAN packets) going out on the port are tagged with VLAN ID. Native VLAN packets are not tagged with VLAN ID.

Command mode Interface configuration mode

Usage Guide N/A

Configuration Examples The following example adds the hybrid port to VLAN 20 and VLAN 30 and the VLAN packets going out on the port are not tagged with VLAN ID.

```
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# switchport mode hybrid
Ruijie(config-if-GigabitEthernet 0/1)#switchport hybrid allowed vlan untagged 20
Ruijie(config-if-GigabitEthernet 0/1)#switchport hybrid allowed vlan add untagged 30
```

The following example adds the hybrid port to VLAN 40 and VLAN 50 and the VLAN packets going out on the port are tagged with VLAN ID,

```
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)#switchport mode hybrid
Ruijie(config-if-GigabitEthernet 0/1)#switchport hybrid allowed vlan tagged 40
Ruijie(config-if-GigabitEthernet 0/1)#switchport hybrid allowed vlan tagged 50
```

The following example removes the hybrid port from VLAN 20.

```
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)#switchport mode hybrid
Ruijie(config-if-GigabitEthernet 0/1)#switchport hybrid allowed vlan remove 20
```

The following example adds the hybrid port to VLAN 20 and deletes all the other VLANs. The VLAN packets going out on the port are tagged with VLAN ID.

```
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)#switchport mode hybrid
Ruijie(config-if-GigabitEthernet 0/1)#switchport hybrid allowed vlan only tagged 20
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.7 switchport hybrid native

Use this command to configure the native VLAN for the hybrid port. Use the **no** or **default** form of this command to restore the default setting.

switchport hybrid native vlan *vlan-id*

no switchport hybrid native vlan

default switchport hybrid native vlan

Parameter Description

Parameter	Description
vlan-id	Configures the native VLAN for the hybrid port.

Defaults The default is VLAN 1.

Command mode Interface configuration mode

Usage Guide Native VLAN packets going out on the hybrid port are not tagged with VLAN ID. Packets not tagged with VLAN ID coming in on the hybrid port are taken as native VLAN packets.

Configuration Examples The following example configures VLAN 20 as the native VLAN for hybrid port GigabitEthernet 0/1.

```
Ruijie(config-if-GigabitEthernet 0/1)#interface gigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)#switchport mode hybrid
Ruijie(config-if-GigabitEthernet 0/1)#switchport hybrid native vlan 20
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.8 switchport trunk allowed vlan

Use this command to add the trunk/uplink port to the VLAN or remove a trunk/uplink port from the VLAN. Use the **no** or **default** form of the command to restore the default setting.

switchport trunk allowed vlan { **all** | { **add** *vlan-list* | **remove** *vlan-list* | **except** *vlan-list* | **only** *vlan-list* } }

no switchport trunk allowed vlan

default switchport trunk allowed vlan

Parameter

Parameter	Description

Description

all	Adds the trunk/uplink port to all VLANs.
add	Adds the trunk/uplink port to the VLAN.
remove	Removes the trunk/uplink port from the VLAN port.
except	Removes the trunk/uplink port from the VLAN and adds the port to all the other VLANs.
only	Adds the trunk/uplink port to the specified VLAN and removes the port from the VLANs not on the VLAN list.
vlan-list	Specifies the VLAN.

Defaults The trunk/unlink port is in all VLANs by default.

Command mode Interface configuration mode.

Usage Guide A trunk/uplink port transmits all VLAN (1-4094) data by default. You can block some VLAN data by configuring this command. Use the **show interfaces** command to display configuration.

Configuration Examples The following example removes trunk port GigabitEthernet 0/10 from VLAN 2.

```
Ruijie(config)# interface gigabitEthernet 0/10
Ruijie(config-if-GigabitEthernet 0/10)# switchport mode trunk
Ruijie(config-if-GigabitEthernet 0/10)# switchport trunk allowed vlan remove
2
```

The following example removes trunk port GigabitEthernet 0/10 from VLAN 2.

```
Ruijie(config)# interface gigabitEthernet 0/10
Ruijie(config-if-GigabitEthernet 0/10)# switchport trunk allowed vlan except
10
```

The following example removes uplink port GigabitEthernet 0/10 from VLAN 10.

```
Ruijie(config)# interface gigabitEthernet 0/10
Ruijie(config-if-GigabitEthernet 0/10)# switchport mode uplink
Ruijie(config-if-GigabitEthernet 0/10)# switchport trunk allowed vlan remove
10
```

The following example adds uplink port GigabitEthernet 0/10 to all VLANs except VLAN10.

```
Ruijie(config)# interface gigabitEthernet 0/10
Ruijie(config-if-GigabitEthernet 0/10)# switchport trunk allowed
vlan except 10
```

The following example adds ptrunk port GigabitEthernet 0/10 to all VLANs except VLAN 10.

```
Ruijie(config)# interface gigabitEthernet 0/10
Ruijie(config-if-GigabitEthernet 0/10)# switchport mode ptrunk
```

```
Ruijie(config-if-GigabitEthernet 0/10)# switchport trunk allowed vlan except
10
```

The following example adds ptrunk port G 0/10 to VLAN 10 and removes it from other VLANs.

```
Ruijie(config)# interface gigabitEthernet 0/10
Ruijie(config-if-GigabitEthernet 0/10)# switchport trunk allowed vlan only 10
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.9 switchport trunk native vlan

Use this command to configure the native VLAN for the trunk/uplink port. Use the **no** or **default** form of this command to restore the default setting.

switchport trunk native vlan *vlan-id*
no switchport trunk native vlan
default switchport trunk native vlan

Parameter Description

Parameter	Description
vlan-id	Native VLAN ID.

Defaults By default, the native VLAN for the trunk/uplink port is VLAN 1.

Command mode Interface configuration mode

Usage Guide After this function is enabled, packets not tagged with VLAN ID are taken as native VLAN packets. Tags are removed from native VLAN packets going out on the trunk port.

Configuration Examples The following example configures VLAN 10 as the native VLAN for trunk port GigabitEthernet 0/10.

```
Ruijie(config)#interface gigabitEthernet 0/10
Ruijie(config-if-GigabitEthernet 0/10)# switchport mode trunk
Ruijie(config-if-GigabitEthernet 0/10)# switch trunk native vlan 10
```

The following example configures VLAN 10 as the native VLAN for uplink port GigabitEthernet 0/10.

```
Ruijie(config)#interface gigabitEthernet 0/10
Ruijie(config-if-GigabitEthernet 0/10)# switchport mode uplink
Ruijie(config-if-GigabitEthernet 0/10)# switch trunk native vlan
```

```
10
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.10 switchport individual-port extend-vlan

Use this command to specify the VLAN list to be inherited after a member trunk/uplink/hybrid port is changed to an independent port. Use the **no** or **default** form of this command to restore the default setting.

switchport individual-port extend-vlan *vlan-list*

no switchport individual-port extend-vlan

default switchport individual-port extend-vlan

Parameter Description

Parameter	Description
vlan-list	Specified VLAN list

Defaults The default extend VLAN list on a trunk/uplink/hybrid port is null by default.

Command mode Interface configuration mode

Default Level 14

Usage Guide This command is supported only by a trunk, uplink or hybrid port. After the extend VLAN list of an aggregation trunk or uplink port is specified, a member trunk or uplink port uses the extend VLAN list configured on the aggregation port as the allowed VLAN list when the member trunk or uplink port is changed to an independent port. After the extend VLAN list of a hybrid port is specified, the extend VLAN list is used as the allowed VLAN list of member hybrid ports. In addition, member hybrid ports changed to independent ports will also inherit the tag VLAN list of the aggregation hybrid port.

Configuration Examples The following example configures VLAN 10 as the extend VLAN for trunk port GigabitEthernet 0/10.

```
Ruijie(config)#interface gigabitEthernet 0/10
Ruijie(config-if-GigabitEthernet 0/10)# switchport mode trunk
Ruijie(config-if-GigabitEthernet 0/10)# switch individual-port extend-vlan 10
```

The following example configures VLAN 10 as the extend VLAN for uplink port GigabitEthernet 0/10.

```
Ruijie(config)#interface gigabitEthernet 0/10
Ruijie(config-if-GigabitEthernet 0/10)# switchport mode uplink
Ruijie(config-if-GigabitEthernet 0/10)# switch individual-port extend-vlan 10
```

The following example configures VLAN 10 as the extend VLAN of hybrid port GigabitEthernet 0/10.

```
Ruijie(config)#interface gigabitEthernet 0/10
Ruijie(config-if-GigabitEthernet 0/10)# switchport mode hybrid
Ruijie(config-if-GigabitEthernet 0/10)# switch individual-port extend-vlan 10
```

Verification Run the **show run** command to display the configurations.

Common Errors This command cannot be configured on an Access port.

6.11 vlan

Use this command to enter the VLAN configuration mode. Use the **no** or **default** form of this command to restore the default setting.

vlan { *vlan-id* | **range** *vlan-range* }

no vlan { *vlan-id* | **range** *vlan-range* }

default vlan { *vlan-id* | **range** *vlan-range* }

Parameter Description

Parameter	Description
vlan-id	VLAN ID Default VLAN (VLAN 1) cannot be removed.
vlan-range	VLAN ID range.

Defaults The default is static VLAN.

Command mode Global configuration mode.

Usage Guide To return to the privileged EXEC mode, input **end** or pressing **Ctrl+C**.

To return to the global configuration mode, input **exit.**

Configuration Examples

```
Ruijie(config)# vlan 1
Ruijie(config-vlan)#
```

Related Commands

Command	Description
show vlan	Displays member ports of the VLAN.

Platform Description N/A

7 MAC VLAN Commands

7.1 mac-vlan enable

Use this command to enable the MAC VLAN function on the port.
Use the **no** form or **default** form of this command to restore the default setting.
mac-vlan enable
no mac-vlan enable
default mac-vlan enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, MAC VLAN is disabled.

Command mode Interface configuration mode

Usage Guide The MAC VLAN entries configured globally will not take effect on the port unless the MAC VLAN function is enabled on this port.
The MAC VLAN function can be enabled on the hybrid port only.

Configuration Examples The following example enables MAC VLAN.

```
Ruijie(config-if-interface-id)# mac-vlan enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.2 mac-vlan mac-address

Use this command to configure the static MAC VLAN entries.
Use the **no** form or **default** form of this command to restore the default setting.
mac-vlan mac-address *mac-address* [**mask** *mac-mask*] **vlan** *vlan-id* [**priority** *pri_val*]
no mac-vlan mac-address *mac-address* [**mask** *mac-mask*] **vlan** *vlan-id* [**priority** *pri_val*]
default mac-vlan mac-address *mac-address* [**mask** *mac-mask*] **vlan** *vlan-id* [**priority** *pri_val*]

Parameter Description

Parameter	Description
mac-address *mac-address*	Specifies the MAC address.
mask *mac-mask*	Specifies the MAC address mask, with the high bits being all 1 in binary. This field is full of F by default.
vlan *vlan-id*	Specifies the VLAN corresponding to the MAC address. The range is from 1 to 4,094.
priority *pri_val*	Specifies the 802.1p priority of the VLAN corresponding to the MAC address. The range is from 0 to 7. The default value is 0.

Defaults No static MAC VLAN entry is configured by default.

Command mode Global configuration mode

Usage Guide Use this command to configure a static MAC VLAN entry including the MAC address, VLAN ID and VLAN priority. Use the **no** form of this command to remove the static MAC VLAN entry.

Configuration Examples The following example configures a static MAC VLAN entry.

Ruijie(config)# mac-vlan mac-address 0001.0001.0001 vlan 100 priority 3

```
Ruijie(config)# mac-vlan mac-address 0002.0002.0000 mask ffff.ffff.0000 vlan 200 priority 5
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.3 show mac-vlan

Use this command to display the MAC VLAN entryies.

show mac-vlan { **all** | **dynamic** | **static** | **vlan** *vlan-id* | **mac-address** *mac-address* [**mask** *mac-mask*] }

Parameter Description

Parameter	Description
all	Displays all MAC VLAN entries.
dynamic	Displays the dynamic MAC VLAN entries.
static	Displays the static MAC VLAN entries.
mac-address	Displays the MAC VLAN entry of the specified MAC address.
mask mac-mask	Displays the MAC VLAN entry of the specified MAC address range.

vlan vlan-id	Displays the MAC VLAN entries of the specified VLAN.

Defaults N/A

Command mode Privileged EXEC modeAll configuration modes

Usage Guide If the **mac-address** parameter is specified without the **mask** parameter, the MAC-VLAN entry of the single MAC address is displayed.
If parameters both of **mac-address** and **mask** are specified, the MAC-VLAN entries in the specified MAC address range are displayed.

Configuration Examples The following example displays all MAC VLAN entries.

```
Ruijie# show mac-vlan all
The following MAC VLAN addresses exist:
S: Static   D: Dynamic
MAC ADDR          MASK           VLAN ID   PRIO   STATE
-------------------------------------------------------
0011.1100.0000   ffff.ff00.0000   100      1     S
0022.2222.0000   ffff.ffff.0000   200      2     S
0000.0000.0003   ffff.ffff.ffff   300      3     D
0000.0000.0004   ffff.ffff.ffff   400      4     D
0000.0000.0005   ffff.ffff.ffff   500      5     S&D
0000.0000.0006   ffff.ffff.ffff   600      6     S
0000.0000.0007   ffff.ffff.ffff   700      7     S&D
Total MAC VLAN address count: 7
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.4 show mac-vlan interface

Use this command to display the interfaces which are enabled with MAC VLAN.
show mac-vlan interface

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command mode Privileged EXEC modeAll configuration modes

Usage Guide Use this command to verify whether the MAC VLAN function is enabled on the interface.

Configuration Examples The following example displays the interfaces which are enabled with MAC VLAN.

```
Ruijie# show mac-vlan interface
MAC VLAN is enabled on following interface:
  ----------------------------------------
  fastethernet 0/3
  fastethernet 0/10
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

8 Super-VLAN Commands

8.1 proxy-arp

Use this command to enable the proxy ARP agent function of for a VLAN. Use the **no** form of this command to disable this function. Use the **default** form of this command torestore the default setting.

proxy-arp

no proxy-arp

default proxy-arp

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/AThis function is enabled by default.

Command mode VLAN configuration Mode.

Usage Guide To return to the privileged EXEC mode, input **end** or press **Ctrl+C**.
To return to the global configuration mode, input **exit**.Super VLAN and sub VLAN must be both enabled with proxy ARP.

Configuration Examples The following example enables the proxy ARP function for VLAN 3.

```
Ruijie(config)# vlan 3
Ruijie(config-vlan)# proxy-arp
```

The following example disables the proxy ARP function for VLAN 3.

```
Ruijie(config)# vlan 3
Ruijie(config-vlan)# no proxy-arp
```

Related Commands

Command	Description
show supervlan	Show Displays the super VLAN information.

Platform Description N/A

8.2 show supervlan

Use this command to show display the configuration of the super VLAN and its sub VLANs.

show supervlan

show supervlan id *vlan-id*

Parameter Description

Parameter	Description
vlan-id	VLAN ID

Defaults N/A

Command mode Privileged EXEC mode.Any mode

Usage Guide N/A

Configuration Examples The following example displays the configuration of super VLAN 2.

```
SwitchA(config-if-range)# show supervlan 2
supervlan id  supervlan arp-proxy  subvlan id  subvlan arp-proxy  subvlan ip
range
------------  -------------------  ----------  -----------------  ---------
          2         ON          10            ON         192.168.196.10 -
192.168.196.50
                              20            ON         192.168.196.60 -
192.168.196.100
                              30            ON         192.168.196.110 -
192.168.196.150Ruijie# show supervlan
supervlan id  supervlan arp-agent  subvlan id  subvlan arp-agent  subvlan ip
range
-------    ----------  -------------    -----------------
3               ON          4               ON
                              5               ONThe following example displays the
configuration of all super VLANs.
SwitchA(config-if-range)# show supervlan
supervlan id  supervlan arp-proxy  subvlan id  subvlan arp-proxy  subvlan ip
range
------------  -------------------  ----------  -----------------  ---------
          2         ON          10            ON         192.168.196.10 -
192.168.196.50
                              20            ON         192.168.196.60 -
192.168.196.100
                              30            ON         192.168.196.110 -
192.168.196.150
          6         ON          7             ON
                              8             ON
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

8.3 subvlan

Use this command to set the sub VLAN of for this the super VLAN or delete . Use the **no** form of this command to disbale this function. Use the **default** form of this command to restore the default settingsub VLAN.

subvlan *vlan-id-list*

no subvlan [*vlan-id-list*]

default subvlan [*vlan-id-list*]

Parameter Description

Parameter	Description
vlan-id-list	Sub VLAN ID of the VLAN. Multiple VLANs are supported.

Defaults N/ANo super VLAN is set by default.

Command mode VLAN configuration Mode.

Usage Guide Use the **no subvlan** command to delete all sub VLANs of this super VLAN.

Configuration Examples The following example sets the sub VLAN for the super VLAN.

```
Ruijie(config)# vlan 3
Ruijie(config-vlan)# supervlan
Ruijie(config-vlan)# subvlan 5
Ruijie(config-vlan)# subvlan 7-19
```

Related Commands

Command	Description
show supervlan	Show Displays the super VLAN information.

Platform Description N/A

8.4 subvlan-address-range *start-ip end-ip*

Use this command to set the IP address range of the sub VLAN. Use the **no** form of this command to disbale this function. Use the **default** form of this command to restore the default setting.

subvlan-address-range *start-ip end-ip*

no subvlan-address-range

default subvlan-address-range

Parameter

Parameter	Description

Description

start-ip	The start IP address of this sub VLAN
end-ip	The end IP address of this sub VLAN

Defaults N/ANo IP address range is set by default.

Command mode VLAN configuration Mode.

Usage Guide To return to the privileged EXEC mode, input **end** or press **Ctrl+C**.
To return to the global configuration mode, input **exit**.

Configuration Examples The following example sets the IP address range for the sub VLAN.

```
Ruijie(config)# vlan 3
Ruijie(config-vlan)# subvlan-address-range
192.168.3.10 192.168.3.100
```

Related Commands

Command	Description
show supervlan	Show Displays the super VLAN information.

Platform Description N/A

8.5 supervlan

Use this command to set the VLAN as a super VLAN. Use the **no** form of this command to disbale this function. Use the **default** form of this command to restore the default setting.
supervlan
no supervlan
default supervlan

Parameter Description

Parameter	Description
N/A	N/A

Defaults No super VLAN is set by default.N/A

Command mode VLAN configuration Mode.

Usage Guide To return to the privileged EXEC mode, input **end** or press **Ctrl+C**.
To return to the global configuration mode, input **exit**.N/A

Configuration Examples The following example sets the VLAN as a super VLAN.

```
Ruijie(config)# vlan 3
Ruijie(config-vlan)# supervlan
```

Related Commands

Command	Description
show supervlan	Show Displays the super VLAN information.

Platform Description N/A

9 Protocol VLAN Commands

9.1 protocol-vlan ipv4 (Global configuration mode)

Use this command to configure VLAN for the specified subnet.

protocol-vlan ipv4 *addr* **mask** *addr* **vlan** *id*

Use this command to remove VLAN configuration for the specified subnet.

no protocol-vlan ipv4 *addr* **mask** *addr*

Use this command to remove VLAN configuration for all subnets.

no protocol-vlan ipv4

Parameter Description

Parameter	Description
addr	IP address in the x.x.x.x format.
id	VLAN ID, the maximal VLAN the product supports

Defaults N/A

Command mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example configures VLAN 100 for the specified subnet.

```
Ruijie(config)# protocol-vlan ipv4 192.168.100.3 mask 255. 255.255.0 vlan 100
```

Related Commands

Command	Description
show protocol-vlan ipv4	N/A
no protocol-vlan ipv4 *addr* **mask** *addr*	N/A
no protocol-vlan ipv4	N/A

Platform Description N/A

9.2 protocol-vlan ipv4 (Interface configuration mode)

Use this command to enable subnet VLAN. Use the **no** form of this command to restore the default setting.

protocol vlan ipv4

no protocol vlan ipv4

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example enables the subnet VLAN.

```
Ruijie(config-if)# protocol vlan ipv4
```

Related Commands

Command	Description
no protocol-vlan ipv4	N/A

Platform Description N/A

9.3 protocol-vlan profile (Global configuration mode)

Use this command to configure the profile for the VLAN.

protocol-vlan profile *num* **frame-type** *type* **ether-type** *type*

protocol-vlan profile *num* **frame-type LLC DSAP** *value* **SSAP** *value*

Use this command to delete the specified profile.

no protocol-vlan profile *num*

Use this command to delete all profiles.

no protocol-vlan profile

Parameter Description

Parameter	Description
num	Profile indexes
type	Type of message and Ethernet
value	Service access point type.

Defaults N/A

Command mode Global configuration mode.

Usage Guide The entry that has been configured cannot be set as a new one. You need to delete the old one and then configure the new one.

The protocol-based VLAN implemented on the DUNE chip only support the delivery of Ethernet-type rules. There is no packet type in the command. Other products support the packet-type and Ethernet-type rules. The packet type and Ethernet type are required in the command.

Configuration Examples The following example configures the profile for the VLAN.

```
Ruijie(config)# protocol-vlan  profile 1 frame-type ETHERII ether-type aarp
Ruijie(config)# protocol-vlan  profile 2 frame-type LLC DSAP 255 SSAP 255
```

Related Commands

Command	Description

Prompt 1: if the profile of protocol VLAN has been applied with the global configuration

```
%Protocol vlan profile xx has been applied, please delete it before you configure this
```

2: If the protocol VLAN already has the same Frame and Ethernet-type global configuration

%Ether type: AARP has been set

9.4 protocol-vlan profile (Interface configuration mode)

Use this command to apply some profile to an interface.

protocol-vlan profile *num* **vlan** *id*

Use this command to clear the specified profile on the port.

no protocol-vlan profile *id*

Use this command to clear all profiles on the port.

no protocol-vlan profile

Parameter Description

Parameter	Description
num	Profile indexes
id	VLAN ID, the maximal VLAN the product supports.

Defaults This function is disabled by default.

Command mode Interface EXEC mode.

Usage Guide 1. The port must be a Trunk or Hybrid port

2. The entry that has been configured cannot be set as a new one. You need to delete the old one and then configure the new one.

Configuration Examples The following example applies profile 1 to VLAN 101.

```
Ruijie(config-if)# protocol-vlan profile 1 vlan 101
```

Related Commands

Command	Description
show protocol-vlan profile	N/A

Prompt 1: if the global configuration for the profile of protocol VLAN has not been applied

```
%Protocol vlan profile 12 hasn't been created, please create it before you configure this
```

2: If the global configuration has been applied to the port, then you need to delete the entry first

```
%Protocol vlan profile 1 has been applied on the port, please detach it before you configure this
```

9.5 show protocol-vlan

Use this command to display a protocol VLAN.

show protocol-vlan [**profile** [*id*] | **ipv4**]

Parameter Description

Parameter	Description
id	Profile index.

Defaults N/A

Command mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the configuration of protocol VLAN.

```
Ruijie#show protocol-vlan

ip            mask          vlan
--------------- --------------- ----
1.2.1.0        255.255.255.0   5

interface           ipv4 status
-------------------- -----------
Gi0/1              enable

profile frame-type      ether-type/DSAP+SSAP   interface      vlan
------- ---------------- ---------------------- --------------- ----
```

```
1       ETHERII         0x5fa
                                            Gi0/1          12
```

Related Commands

Command	Description
N/A	N/A

Platform Description

10 Private VLAN Commands

10.1 debug bridge pvlan

Use this command to enable private VLAN debugging. Use the **no** or **default** form of this command to restore the default setting.

debug bridge pvlan

no debug bridge pvlan

Parameter Description

Parameter	Description
N/A	N/A

Defaults Debugging is disabled by default.

Command mode Privileged EXEC mode

Usage Guide Debugging information includes error and prompt messages appearing during private VLAN configuration.

This command can be used to troubleshoot VLAN and interface configuration failure.

- With private VLAN debugging enabled, all super VLAN configuration and packet processing on SVI is displayed.
- Debugging information helps troubleshooting and fault location.

Configuration Examples The following example enables private VLAN debugging.

```
Ruijie# debug bridge pvlan
```

The following example disables private VLAN debugging.

```
Ruijie# no debug bridge pvlan
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10.2 private-vlan

Use this command to configure the private VLAN feature. Use the **no** or **default** form of this

command to restore the default setting.

private-vlan { **community** | **isolated** | **primary** }

no private-vlan { **community** | **isolated** | **primary** }

default private-vlan { **community** | **isolated** | **primary** }

Parameter Description

Parameter	Description
community	Sets the community VLAN.
isolated	Sets the isolated VLAN.
primary	Sets the primary VLAN.

Defaults No private VLAN feature is configured by default.

Command mode VLAN configuration mode

Usage Guide N/A

Configuration Examples The following example configures the private VLAN feature.

```
Ruijie(config)#vlan 90
Ruijie(config-vlan)#private-vlan primary
Ruijie(config-vlan)#vlan 91
Ruijie(config-vlan)#private-vlan isolated
Ruijie(config-vlan)#vlan 92
Ruijie(config-vlan)#private-vlan community
```

The following example disables the private VLAN feature using the **no private-vlan** command.

```
Ruijie(config)#vlan 90
Ruijie(config-vlan)#no private-vlan primary
Ruijie(config-vlan)#vlan 91
Ruijie(config-vlan)#no private-vlan isolated
Ruijie(config-vlan)#vlan 92
Ruijie(config-vlan)#no private-vlan community
```

The following example disables the private VLAN feature using the **default private-vlan** command.

```
Ruijie(config)#vlan 90
Ruijie(config-vlan)#default private-vlan primary
Ruijie(config-vlan)#vlan 91
Ruijie(config-vlan)#default private-vlan isolated
Ruijie(config-vlan)#vlan 92
Ruijie(config-vlan)#default private-vlan community
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10.3 private-vlan association

Use this command to associate the secondary VLAN with the primary commandVLAN on layer 2. Use the **no** or **default** form of this command to restore the default setting.
private-vlan association { *svlist* | **add** *svlist* | **remove** *svlist* }
no private-vlan association
default private-vlan association

Parameter Description

Parameter	Description
svlist	The secondary VLAN list
add *svlist***no**	Removes the association between the primary VLAN and all the secondary VLANs.Adds the associated secondary VLAN.
remove *svlist*	Removes the associated secondary VLAN.

Defaults No association.This function is disabled by default.

Command mode Primary VLAN configuration Mode.

Usage Guide N/A

Configuration Examples The following example associates the secondary VLAN with the primary VLAN on layer 2.

```
Ruijie(config)# vlan 22
Ruijie(config-vlan)# private-vlan association add 24-26
```

Related Commands

Command	Description
show vlan private-vlan	N/A

Platform Description The software version must be RGOS10.1 and later. N/A

10.4 private-vlan mapping

Use this command to associate the secondary VLAN with the primary VLAN on layer 3map the secondary VLAN to the L3 SVI interface. Use the **no** or **default** form of this command to restore the default setting.
private-vlan mapping { *svlist* | **add** *svlist* | **remove** *svlist* }
no private-vlan mapping

default private-vlan mapping

Parameter Description

Parameter	Description
svlist	Secondary VLAN list.
add *svlist***no**	Adds the associated secondary VLAN.Deletes the mapping.
remove *svlist*	Removes the associated secondary VLAN.

Defaults This function is disabled by default.N/A

Command mode The interface mode corresponding to the primary VLANInterface configuration mode

Usage Guide N/A

Configuration Examples The following example associates the secondary VLAN with the primary VLAN on layer 3.

```
Ruijie(config)# interface vlan 22
Ruijie(config-if)# private-vlan mapping add 24-26
```

Related Commands

Command	Description
show vlan private-vlan	N/A

Platform Description The software version must be RGOS10.1 and later. N/A

10.5 switchport mode private-vlan

Use this command to declare the private VLAN mode of the interface. Use the **no** or **default** form of this command to restore the default setting.

switchport mode private-vlan { **host** | **promiscuous** }

no switchport mode

default switchport mode

Parameter Description

Parameter	Description
host	Host mode of the private VLAN
promiscuous	Promiscuous mode of the private VLAN
no	Deletes the private VLAN configuration of the port.

Defaults N/AThe port is an access port by default.

Command Interface configuration mode.

mode

Usage Guide N/A

Configuration Examples The following example declares the private VLAN mode of the interface.

```
Ruijie(config)# interface gigabitEthernet0/2
Ruijie(config-if)# switchport mode private-vlan host
```

Related Commands

Command	Description
show vlan private-vlan	N/A

Platform Description The software version must be RGOS10.1 and later. N/A

10.6 switchport private-vlan host-association

Use this command to associate the primary VLAN, which is associated with the private VLAN mode of the interface, with the secondary VLAN. Use the **no** or **default** form of this command to restore the default settings.

switchport private-vlan host-association *p_vid s_vid*

no switchport private-vlan host-association

default switchport private-vlan host-association

Parameter Description

Parameter	Description
p_vid	Primary VID.
s_vid	Secondary VID

Defaults This function is disabled by default.

Command mode Interface configuration mode.

Usage Guide The port should be a host port of Private VLAN.

The associated Private VLAN should be a secondary VLAN.

Configuration Examples The following example associates the secondary VLAN with the primary VLAN on the host port.

```
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport mode private-vlan host
Ruijie(config-if)# switchport private-vlan host-association 22 23
Ruijie(config-if)# default switchport private-vlan host-asscioation
Ruijie(config-if)# switchport private-vlan host-association 22 25
```

Related Commands	Command	Description
	N/A	

Prompt

1. If the specified host VLAN is not host VLAN
Operation is not supported on interface GigabitEthernet 0/1: the primary vlan doesn't exist!

2. If the associated secondary VLAN and host VLAN is not associated on the Layer 2
Operation is not supported on interface GigabitEthernet 0/1: the VLAN pair(22-23) is invalid!

10.7 switchport private-vlan mapping

Use this command to configure the promiscuous secondary VLANs that the promiscuous mode of the private VLAN maps for the hybrid port. Use the **no** or **default** form of this command to restore the default settings.

switchport private-vlan mapping *p_vid* { *svlist* | **add** *svist* | **remove** *svlist* }

no switchport private-vlan mapping

default switchport private-vlan mapping

Parameter Description	Parameter	Description
	p_vid	Primary VID
	svlist	Secondary VLAN list.
	add	Add a promiscuous secondary VLAN.
	Remove	Removes all the promiscuous secondary VLANs.

Defaults No promiscuous secondary VLAN is configuredThis function is disabled by default.

Command mode Hybrid interface configuration mode of private VLAN

Usage Guide The port should be a promiscuous port
The host VLAN and secondary VLAN should be associated on layer 2

Configuration Examples The following example configures the secondary VLAN for the hybrid port.

```
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport mode private-vlan
promiscuous
Ruijie(config-if)# switchport private-vlan mapping 22 add 23-25
```

Related Commands	Command	Description

show vlan private-vlan	N/A

Prompt
1. If the specified host VLAN is not a host VLAN

```
Operation is not supported on interface GigabitEthernet 0/1: the primary vlan doesn't exist!
```

2. If the host VLAN and secondary VLAN are not associated on layer 2

The vlan pair(22-23) is invalid!

Common Error
1. The host VLAN and secondary VLAN are not associated on layer 2
2. The associated host VLAN and secondary VLAN have no private VLAN attribute or attribute is wrong

10.8 show vlan private-vlan

Use this command to Show display the configuration of private VLAN configuration.

show vlan private-vlan [**community** | **primary** | **isolated**]

Parameter Description

Parameter	Description
primary	DisplaysShows the primary VLAN information.
community	DisplaysShows the community VLAN information.
isolated	DisplaysShows the isolated VLAN information.

Defaults No private VLAN is configured.N/A

Command mode Privileged EXEC mode.All modes

Usage Guide N/A

Configuration Examples The following example displays the private VLAN configuration.

```
Ruijie# show vlan private-vlan
```

Related Commands

Command	Description
N/A	N/A

Platform Description The software version must be RGOS10.1 and later. N/A

11 MSTP Commands

11.1 bpdu src-mac-check

Use this command to enable the BPDU source MAC address check function on the interface. Use the **no** form of this command to restore the default setting.

bpdu src-mac-check H.H.H

no bpdu src-mac-check

Parameter Description

Parameter	Description
H.H.H	Indicates that only the BPDU messages from this MAC address are received.
no	Indicate that the BPDU messages from any MAC address are received.

Defaults This function is disabled by default.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example enables the BPDU source MAC address check function on the interface.

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# bpdu src-mac-check 00d0.f800.1e2f
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.2 bridge-frame forwarding protocol bpdu

Use this command to enable BPDU transparent transmission. Use the **no** form of this command to restore the default setting.

bridge-frame forwarding protocol bpdu

no bridge-frame forwarding protocol bpdu

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide In the IEEE 802.1Q standard, 01-80-C2-00-00-00, the destination MAC address of BPDU frames, is reserved. Devices following the IEEE 802.1Q standard don't forward BPDU frames. In real network deployment, devices may be required to support BPDU transparent transmission. For example, when a device is not enabled with STP, BPDU transparent transmission can help implement STP calculation.
BPDU transparent transmission works only when STP is disabled.

Configuration Examples The following example enables BPDU transparent transmission.

```
Ruijie(config)# bridge-frame forwarding protocol bpdu
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.3 clear spanning-tree counters

Use this command to clear the statistics of STP transceived packets.
clear spanning-tree detected-protocols [**interface** *interface-id*]

Parameter Description

Parameter	Description
interface-id	ID of the interface

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example clears the statistics of STP transceived packets.

```
Ruijie# clear spanning-tree counters
```

Related Commands

Command	Description
show spanning-tree counters	Displays the statistics of STP transceived packets.

Platform Description N/A

11.4 clear spanning-tree detected-protocols

Use this command to force the interface to send the RSTP BPDU message and check the BPDU messages.

clear spanning-tree detected-protocols [**interface** *interface-id*]

Parameter Description

Parameter	Description
interface-id	ID of the interface

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples

```
Ruijie# clear spanning-tree detected-protocols
```

Related Commands

Command	Description
show spanning-tree interface	Displays the STP configuration of the interface.

Platform Description N/A

11.5 clear spanning-tree mst topochange record

Use this command to clear STP topology change record.

clear spanning-tree mst *instance-id* **topochange record**

Parameter Description

Parameter	Description
instance-id	Instance ID. For STP and RSTP protocols, only instance 0 is valid.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example clears STP topology change record.

```
Ruijie# show spanning-tree mst 0 topochange record
Topology change information on mst 0:
 Time              Interface          Old status   New status   Type
 ------------------ -------------------- ------------ ------------
----------------
 2013.5.1 4:18:46   GI0/6              Learning     Forwarding   Normal
Ruijie# clear spanning-tree mst 0 topochange record
Ruijie# show spanning-tree mst 0 topochange record
%There's no topology change information has been record on mst 0.
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.6 l2protocol-tunnel stp

Use this command to enable BPDU TUNNEL globally. Use the **no** form of this command to disable this function.

l2protocol-tunnel stp

no l2protocol-tunnel stp

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Global configuration mode

Mode

Usage Guide If you want to BPDU TUNNEL globally, enable BPDU TUNNEL on the interface first.

Configuration Examples The following example enables BPDU TUNNEL globally.

```
Ruijie(config)# l2protocol-tunnel stp
Ruijie(config)# show l2protocol-tunnel stp

L2protocol-tunnel: stp Enable
L2protocol-tunnel destination mac address: 01d0.f800.0005
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.7 l2protocol-tunnel stp enable

Use this command to enable BPDU TUNNEL on the interface. Use the **no** form of this command to disable this function.

l2protocol-tunnel stp enable

no l2protocol-tunnel stp enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Interface configuration mode

Usage Guide If you want to BPDU TUNNEL globally, enable BPDU TUNNEL on the interface first.

Configuration Examples The following example enables BPDU TUNNEL on the interface.

```
Ruijie(config-if-interface-id)# l2protocol-tunnel stp enable
Ruijie(config-if-interface-id)# show l2protocol-tunnel stp

L2protocol-tunnel: stp Enable
L2protocol-tunnel destination mac address: 01d0.f800.0005
GigabitEthernet 0/1 l2protocol-tunnel stp enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.8 l2protocol-tunnel stp tunnel-dmac

Use this command to configure the STP address for transparent transmission through BPDU TUNNEL. Use the **no** form of this command to restore the default setting.

l2protocol-tunnel stp tunnel-dmac *mac-address*

no l2protocol-tunnel stp tunnel-dmac

Parameter Description

Parameter	Description
mac-address	The STP address for transparent transmission.

Defaults The defualt is 01d0.f800.0005.

Command Mode Global configuration mode

Usage Guide The available STP address includes 01d0.f800.0005, 011a.a900.0005, 010f.e200.0003, 0100.0ccd.cdd0, 0100.0ccd.cdd1, and 0100.0ccd.cdd2.

Configuration Examples The following example configures the STP address for transparent transmission through BPDU TUNNEL.

```
Ruijie(config)# l2protocol-tunnel stp tunnel-dmac 011a.a900.0005
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.9 show l2protocol-tunnel stp

Use this command to display BPDU TUNNEL configuration.

show l2protocol-tunnel stp

Parameter

Parameter	Description

Description

N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode / Global configuration mode / Interface configuration mode

Usage Guide N/A

Configuration Examples The following example displays BPDU TUNNEL configuration.

```
Ruijie# show l2protocol-tunnel stp

L2protocol-tunnel: stp Enable
L2protocol-tunnel destination mac address:011a.a900.0005
GigabitEthernet 0/1 l2protocol-tunnel stp enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.10 show spanning-tree

Use this command to display the global spanning-tree configuration.

show spanning-tree [summary | forward-time | hello-time | max-age | inconsistentports| tx-hold-count | pathcost method | max_hops | counters]

Parameter Description

Parameter	Description
summary	Displays the information of MSTP instances and forwarding status of the interfaces.
inconsistentports	Displays the block port due to root guard or loop guard.
forward-time	Displays BridgeForwardDelay.
hello-time	Displays BridgeHelloTime.
max-age	Displays BridgeMaxAge.
max-hops	Displays the maximum hops of an instance.
tx-hold-count	Displays TxHoldCount.
pathcost method	Displays the method used for calculating path cost.
counters	Displays the statistics of STP transceived packets.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the global spanning-tree configuration.

```
Ruijie# show spanning-tree hello-time
```

Related Commands

Command	Description
spanning-tree pathcost method	Sets the pathcost method.
spanning-tree forward-time	Sets BridgeForwardDelay.
spanning-tree hello-time	Sets BridgeHelloTime.
spanning-tree max-age	Sets BridgeMaxAge.
spanning-tree max-hops	Sets the maximum hops of an instance.
spanning-tree tx-hold-count	Displays TxHoldCount.

Platform Description N/A

11.11 show spanning-tree interface

Use this command to display the STP configuration of the interface, including the optional spanning tree.

show spanning-tree interface *interface-id* [{ **bpdufilter** | **portfast** | **bpduguard** | **link-type** }]

Parameter Description

Parameter	Description
interface-id	Interface ID
bpdufilter	Displays the status of BPDU filter.
portfast	Displays the status of portfast.
bpduguard	Displays the status of BPDU guard.
link-type	Displays the link type of an interface.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the STP configuration of the interface.

```
Ruijie#  show spanning-tree interface gigabitethernet 1/5
```

Related Commands

Command	Description
spanning-tree bpdufilter	Enables the BPDU filter feature someone the interface.
spanning-tree portfast	Enables the portfast on the interface.
spanning-tree bpduguard	Enables the BPDU guard on the interface.
spanning-tree link-type	Sets the link type of the interface to point-to-point.

Platform Description N/A

11.12 show spanning-tree mst

Use this command to display the information of MST and instances.

show spanning-tree mst { **configuration** | *instance-id* [**interface** *interface-id*] }

Parameter Description

Parameter	Description
configuration	The MST configuration of the equipment.
instance-id	Instance number
interface-id	Interface number

Defaults All the instances are displayed by default.

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide N/A

Configuration Examples The following example displays the information of MST and instances.

```
Ruijie# show spanning-tree mst configuration
Multi spanning tree protocol : Enable
Name    : test
Revision : 0
Instance  Vlans Mapped
-------- ---------------------------------------------
0       : 2-4094
1       : 1
```

Field Description

Field	Description
Multi spanning tree protocol	Enables MSTP protocol.
Name	Name of the MST region
Revision	Revision of the MST region
Instance Vlans Mapped	Mapping relation between the instance and VLAN

Related Commands

Command	Description
spanning-tree mst configuration	Configures the MST region.
spanning-tree mst cost	Displays the path cost of the instance.
spanning-tree mst max-hops	Displays the maximum hops of the instance.
spanning-tree mst priority	Displays the equipment priority of the instance.
spanning-tree mst port-priority	Displays the port priority of the instance.

Platform Description N/A

11.13 show spanning-tree mst topochange record

Use this command to display the STP topology change record.

show spanning-tree mst *instance-id* **topochange record**

Parameter Description

Parameter	Description
instance-id	Instance ID.

Defaults N/A

Command Mode Privileged EXEC mode / Global configuration mode / Interface configuration mode

Usage Guide N/A

Configuration Examples The following example displays the STP topology change record of instance 0.

```
Ruijie# show spanning-tree mst 0 topochange record
Topology change information on mst 0:
 Time              Interface          Old status   New status   Type
 ------------------- -------------------- ------------ ------------
----------------
 2013.5.1 4:18:46    GI0/6               Learning     Forwarding   Normal
```

Field	Description
Time	The time when the topology changes.

Interface	The interface whose topology changes.
Old status	Old STP status on the interface.
New status	New STP status on the interface.
Type	Topology change may be caused by the following causes: Normal: UP/DOWN state change on the interface, LoopGuard Block: Loop-inconsistence causes the interface to be blocked. RootGuard Block: Root-inconsistence causes the interface to be blocked. Inferior Block: Receiving inferior BPDU frames causes the interface to be blocked. LoopGuard Unblock: The interface returns to Forward status from loop-inconsistence. RootGuard Unblock: The interface returns to Forward status from root-inconsistence. Inferior Unblock-The interface returns to Forward status after not receiving inferior BPDU frames.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.14 show spanning-tree v-stp information

Use this command to display the VSTP configuration.

show spanning-tree v-stp information

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode / Global configuration mode / Interface configuration mode

Usage Guide N/A

Configuration The following example displays the VSTP configuration.

Examples

```
Ruijie#show spanning-tree v-stp information

V-STP status               : enable
Local bridge mac           : 5869.6c21.5433
Selected bridge mac        : 5869.6c21.5433
Peerlink Port              : AggregatePort 4
Calculate Virtrual Index    : 0
Mlag Remote device connected : Y

MST 0 Root Port       : AggregatePort 1
MST 2 Root Port       : AggregatePort 1
```

Related Commands

Command	Description
show spanning-tree	Displays the global STP configuration.
spanning-tree mst cost	Sets the PathCost of an STP interface.
spanning-tree tx-hold-count	Sets the global TxHoldCount of STP.

Platform Description N/A

11.15 spanning-tree

Use this command to enable MSTP and configure its basic settings globally. The **no** form of the command disables the spanning-tree function. The **no** form of the command with parameters only restores the corresponding parameters to the default values, but does not disable the spanning-tree function.

spanning-tree [**forward-time** *seconds* | **hello-time** *seconds* | **max-age** *seconds*]

no spanning-tree [**forward-time** | **hello-time** | **max-age**]

Parameter Description

Parameter	Description
forward-time *seconds*	Interval at which the port status changes, in the range from 4 to 30 in the unit of seconds. The default is 15.
hello-time *seconds*	Interval at which the switch sends the BPDU message, in the range from 1 to 10 in the unit of seconds. The default is 2.
max-age *seconds*	Maximum aging time of the BPDU message, in the range from 6 to 40 in the unit of seconds. The default is 20.

Defaults This function is disabled by default.

Command Mode Global configuration mode.

Usage Guide The values of **forward-time, hello time** and **max-age** are interrelated. Modifying one of these three parameters will affect the others. There is a restricted relationship among the above three values.
2*(Hello Time+1.0snd) <= Max-Age Time <= 2*(Forward-Delay–1.0snd)
If the values do not according with the condition, the settings do not work.

Configuration Examples The following example enables the spanning-tree function.

```
Ruijie(config)# spanning-tree
```

The following example configures the BridgeForwardDelay.

```
Ruijie(config)# spanning-tree  forward-time 10
```

Related Commands

Command	Description
show spanning-tree	Displays the global STP configuration.
spanning-tree mst cost	Sets the PathCost of an STP interface.
spanning-tree tx-hold-count	Sets the global TxHoldCount of STP.

Platform Description N/A

11.16 spanning-tree autoedge

Use this command to enable Autoedge on the interface. Use the **disabled** form of this command to disable this function.
spanning-tree autoedge [**disabled**]

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example enables Autoedge on the interface.

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# spanning-tree autoedge disabled
```

Related Commands

Command	Description

show spanning-tree interface	Displays the STP configuration information of the interface.

Platform Description N/A

11.17 spanning-tree bpdufilter

Use this command to enable BPDU filter on the interface. You can use the **enabled** or **disabled** option of the command to enable or disable the BPDU filter function on the interface.

spanning-tree bpdufilter [**enabled** | **disabled**]

Parameter Description

Parameter	Description
enabled	Enables BPDU filter on the interface.
disabled	Disables BPDU filter on the interface.

Defaults This function is disabled by default,

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example enables BPDU filter on the interface.

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# spanning-tree bpdufilter enable
```

Related Commands

Command	Description
show spanning-tree interface	Displays the STP configuration of the interface.

Platform Description N/A

11.18 spanning-tree bpduguard

Use this command to enable the BPDU guard function on the interface. You can use the **enabled** or **disabled** option of the command to enable or disable the BPDU guard function on the interface.

spanning-tree bpduguard [**enabled** | **disabled**]

Parameter Description

Parameter	Description

enabled	Enables BPDU guard on the interface.
disabled	Disables BPDU guard on the interface.

Defaults This function is disabled by default.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example enables the BPDU guard function on the interface.

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# spanning-tree bpduguard enable
```

Related Commands

Command	Description
show spanning-tree interface	Displays the STP configuration of the interface.

Platform Description N/A

11.19 spanning-tree compatible enable

Use this command to send the message selectively carried with MSTI according to the interface attribute of current port to realize interconnection with other vendors. Use the **no** form of this command to restore the default setting.

spanning-tree compatible enable

no spanning-tree compatible enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default. .

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example sends the message selectively carried with MSTI according to the interface attibute of current port to realize interconnection with other vendors.

```
Ruijie(config)# spanning-tree compatible enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.20 spanning-tree guard loop

Use this command to enable **loop guard** on the interface to prevent the root port or backup port from generating loop since they can not receive bpdu. Use the **no** form of this command to disable **loop guard**.

spanning-tree guard loop

no spanning-tree guard loop

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example enables **loop guard** on the interface.

```
Ruijie(config)# spanning-tree guard loop
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.21 spanning-tree guard none

Use this command to disable **guard** on the interface. Use the **no** form of this command to enable this function

spanning-tree guard none

no spanning-tree guard none

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example disables **guard** on the interface.

```
Ruijie(config)# spanning-tree guard none
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.22 spanning-tree guard root

Use this command to enable **root guard** on the interface to prevent the change of current root bridge position because of error configuration and illegal packet attack. Use the **no** form of this command to restore the default setting.

spanning-tree guard root

no spanning-tree guard root

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example enables **root guard** on the interface.

```
Ruijie(config)# spanning-tree guard root
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.23 spanning-tree ignore tc

Use this command to enable the tc filtering on the interface. Use the **no** form of this command to restore the default setting. With tc filtering enabled, the TC packets received on the interface will not be processed.

spanning-tree ignore tc

no spanning-tree ignore tc

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example enables the tc filtering on the interface.

```
Ruijie(config-if)# spanning-tree ignore tc
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.24 spanning-tree link-type

Use this command to configure the link type of the interface. Use the **no** form of this command to restore the default setting.

spanning-tree link-type [**point-to-point** | **shared**]

no spanning-tree link-type

Parameter Description

Parameter	Description
point-to-point	Sets the link type of the interface to point-to-point.
shared	Forcibly sets the link type of the interface to shared.

Defaults For a full-duplex interface, its link type is set to point-to-point link; for a half-duplex interface, its link type is set to shared.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example configures the link type of the interface.

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# spanning-tree link-type
point-to-point
```

Related Commands

Command	Description
show spanning-tree interface	Displays the STP configuration of the interface.

Platform Description N/A

11.25 spanning-tree loopguard default

Use this command to enable **loop guard** globally to prevent the root port or backup port from generating loop since they cannot receive bpdu. Use the **no** form of this command to restore the default setting.

spanning-tree loopguard default

no spanning-tree loopguard default

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example enables **loop guard** globally to prevent the root port or backup port from generating loop since they cannot receive bpdu.

```
Ruijie(config)# spanning-tree loopguard default
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.26 spanning-tree max-hops

Use this command to set the maximum number of hops(Max-hopsCount) of the BPDU message in the global configuration mode, the number of hops in a region that the BPDU message passes before being dropped. This parameter takes effect for all instances. Use the **no** form of this command to restore the default setting.

spanning-tree max-hops *hop-count*

no spanning-tree max-hops

Parameter Description

Parameter	Description
hop-count	Number of hops in a region that the BPDU message passes before being dropped. The range is 1 to 40 hops.

Defaults The default is 20 hops.

Command Mode Global configuration mode.

Usage Guide In the region, the BPDU message sent by the root bridge includes a Hot Count field. When the BPDU message passes a device, the Hop Count is decreased by 1 until it reaches 0, which indicates the BPDU message times out. The device will drop the BPDU message whose Hop Count is 0. Changing the max-hops command affects all instances.

Configuration Examples This example sets the max-hops of the spanning tree to 10 for all instances.

```
Ruijie(config)# spanning-tree  max-hops 10
```

You can verify your setting by entering the **show spanning-tree mst** command in the privileged EXEC mode.

Related

Command	Description

Commands

show spanning-tree	Displays the MSTP information.

Platform Description N/A

11.27 spanning-tree mode

Use this command to set the STP version. Use the **no** form of the command to restore the default setting.

spanning-tree mode [**stp** | **rstp** | **mstp**]

no spanning-tree mode

Parameter Description

Parameter	Description
stp	Spanning tree protocol(IEEE 802.1d)
rstp	Rapid spanning tree protocol(IEEE 802.1w)
mstp	Multiple spanning tree protocol(IEEE 802.1s)

Defaults The default is **mstp**.

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the STP version.

```
Ruijie(config)# spanning-tree mode stp
```

Related Commands

Command	Description
show spanning-tree	Displays the spanning-tree configuration.

Platform Description N/A

11.28 spanning-tree mst configuration

Use this command to enter the MST configuration mode in the global configuration mode and configure the MSTP region. Use the **no** form of the command to restore the default setting.

spanning-tree mst configuration

no spanning-tree mst configuration

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, *revision* is 0.

Command Mode Global configuration mode.

Usage Guide To return to the privileged EXEC mode, enter end or Ctrl+C.
To return to the global configuration mode, enter exit.
After entering the MST configuration mode, you can use the following commands to configure parameters:
instance instance-id vlan vlan-range: Adds the VLANs to the MST instance. The range of instance-id is 0 to 64 and the range of VLAN is 1 to 4095. The vlan-range can be a collection of some inconsecutive VLANs separated with comma or some consecutive VLANs in the form of start VLAN number–end VLAN number. For example, instance 10 vlan 2,3,6-9 means that VLANs 2, 3, 6, 7, 8, 9 are added to instance 10. By default, all VLANs are in Instance0. To remove a VLAN from an instance, use the no form of the command: no instance instance-id [vlan vlan-range]. (In this case, the range of instance is 1 to 64).
name name: Specify the MST name, a string of up to 32 characters. You can use the no name command to restore it to the default setting.
revision version: Set the MST versions in the range 0 to 65535. You can use the no name command to restore it the default setting.
show spanning-tree mst configuration: Shows the information of the MST region.

Configuration Examples This example enters the MST configuration mode, and maps VLANs 3. 5 to 10 to MST instance 1:

```
Ruijie(config)# spanning-tree mst configuration
Ruijie(config-mst)# instance 1 vlan  3, 5-10
Ruijie(config-mst)# name region 1
Ruijie(config-mst)# revision  1
Ruijie(config-mst)# show spanning-tree mst configuration
MST configuration
Name [region1]
Revision 1
Instance  Vlans Mapped
----------  --------------------
0       1-2,4,11-4094
1       3,5-10
---------------------------------
Ruijie(config-mst)# exit
Ruijie(config)#
```

Related Commands

Command	Description
show spanning-tree mst	Displays the MST region configuration.

Platform Description N/A

11.29 instance instance-id vlan vlan-range

Use this command to set instance and VLAN mapping relations. Use the **no** form of the command to restore the default setting.

instance *instance-id* **vlan** *vlan-range*

no instance *instance-id* { **vlan** *vlan-range* }

Parameter Description

Parameter	Description
instance-id	Instance ID, in the range from 0 to 64
vlan-range	VLAN range, in the range from 1 to 4094.

Defaults

The default is instance 0.

Command Mode MST configuration mode

Usage Guide

instance *instance-id* **vlan** *vlan-range*：Add VLAN to MST instance. Instance-ID is in the range from 0 to 64 and VLAN is in the range from 1 to 4094. Use commas to separate VLAN IDs and use hyphen to indicate VLAN range, e.g., instance 10 vlan 2,3,6-9, which adds VLAN 2, 3, 4, 5, 6, 7, 8, 9 to instance 10. By default, all VLANs are in instance 0. Use the **no** form of this command to remove VLAN from instance 1-64.

If you create 64 instances by stacking on a Ruijie device with a small memory (e.g., 64M), the memory may be undersized. It is recommended to limit stacking instance number.

Configuration Examples This example enters MST mode and maps VLAN 3 and 5-10 to MST instance1.

```
Ruijie(config)# spanning-tree mst configuration
Ruijie(config-mst)# instance 1 vlan 3，5-10
Ruijie(config-mst)# show spanning-tree mst configuration
Multi spanning tree protocol : Enable
Name    :
Revision : 0
Instance  Vlans Mapped
----------  --------------------
0       1-2,4,11-4094
1       3,5-10
```

```
---------------------------------
Ruijie(config-mst)# exit
Ruijie(config)#
```

The following example removes VLAN3 from instance 1.

```
Ruijie(config-mst)# no instance 1 vlan 3
```

The following example removes instance 1.

```
Ruijie(config-mst)# no instance 1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.30 revision

Use this command to set revision number of MSTP region. Use the **no** form of the command to restore the default setting.

revision *version*

no revision

Parameter Description

Parameter	Description
version	MST revision number, in the range from 0 to 65535.

Defaults The default revision is 0.

Command Mode MST configuration mode

Usage Guide **revision** *version*: Sets the MST version, in the range from 0 to 65535.

show spanning-tree mst configuration: Displays MST region information.

Configuration Examples This example sets revision number to1.

```
Ruijie(config)# spanning-tree mst configuration
Ruijie(config-mst)# revision 1
Ruijie(config-mst)# show spanning-tree mst configuration
Multi spanning tree protocol : Enable
Name    :
Revision : 1
Instance  Vlans Mapped
-------- ---------------------------------------------
0       : ALL
```

```
Ruijie(config-mst)# exit
Ruijie(config)#
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.31 name

Use this command to set MST name. Use the **no** form of the command to restore the default setting.

name *name*

no name

Parameter Description

Parameter	Description
name	MST name, up to 32 characters.

Defaults The default name is NULL.

Command Mode MST configuration mode

Usage Guide **name** *name*: Sets the MST name, up to 32 characters.

show spanning-tree mst configuration: Displays MST region information.

Configuration Examples This example sets revision to 1.

```
Ruijie(config)# spanning-tree mst configuration
Ruijie(config-mst)# name region1
Ruijie(config-mst)# show spanning-tree mst configuration
Multi spanning tree protocol : Enable
Name     : region1
Revision : 0
Instance  Vlans Mapped
--------  ------------------------------------------
0       : ALL
Ruijie(config-mst)# exit
Ruijie(config)#
```

Related

Command	Description

Commands

N/A	N/A

Platform Description N/A

11.32 spanning-tree mst cost

Use this command to set the path cost of an instance in the interface configuration mode. Use the **no** form of the command to restore the default setting.

spanning-tree [**mst** *instance-id*] **cost** *cost*

no spanning-tree [**mst** *instance-id*] *cost*

Parameter Description

Parameter	Description
instance-id	Instance ID in the range from 0 to 64.
cost	Path cost in the range from 1 to 200,000,000.

Defaults The default instance-id is 0.

The default value is calculated by the link rate of the interface automatically.

1000 Mbps—20000

100 Mbps—200000

10 Mbps—2000000

Command Mode Interface configuration mode.

Usage Guide A higher cost value means a higher path cost.

Configuration Examples This example sets the path cost to 400 on the interface associated with instances 3.

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# spanning-tree mst 3 cost 400
```

You can verify your settings by entering the **show spanning-tree mst interface** *interface-id* command in the privileged EXEC mode.

Related Commands

Command	Description
show spanning-tree mst	Displays the MSTP information of an interface.
spanning-tree mst port-priority	Configures the priority of an interface.
spanning-tree mst priority	Configures the priority of an instance.

Platform Description N/A

11.33 spanning-tree mst port-priority

Use this command to configure the interface priority for different instances in the interface configuration mode. It will determine which interface of a loop in a region is in charge of forwarding. Use the **no** form of this command to restore the default setting.

spanning-tree [**mst** *instance-id*] **port-priority** *priority*

no spanning-tree [**mst** *instance-id*] **port-priority**

Parameter Description

Parameter	Description
Instance-id	Instance ID, in the range of 0 to 64
priority	Interface priority. Sixteen integers are available: 0, 16, 32, 48, 64, 80, 96, 112, 128, 144, 160, 176, 192, 208, 224, 240, which are the multiples of 16.

Defaults The default instance-id is 0.
The default priority is 128.

Command Mode Interface configuration mode.

Usage Guide When a loop occurs in the region, the interface of the higher priority will be in charge of forwarding. If all interfaces have the same priority value, the interface of the smaller number will be in charge of the forwarding.

Configuration Examples This example sets the priority of **gigabitethernet 1/1** to 10 in instance 20.

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# spanning-tree mst 20 port-priority 0
```

You can verify your settings by entering the **show spanning-tree mst** *instance-id* privileged command.

Related Commands

Command	Description
show spanning-tree mst	Displays the MSTP information of an interface.
spanning-tree mst cost	Sets the path cost.
spanning-tree mst priority	Sets the device priority for different instances.

Platform Description N/A

11.34 spanning-tree mst priority

Use this command to set the device priority for different instances in the global configuration mode.

Use the **no** form of this command to restore the default setting.

spanning-tree [**mst** *instance-id*] **priority** *priority*

no spanning-tree [**mst** *instance-id*] **priority**

Parameter Description

Parameter	Description
instance-id	Instance ID, in the range of 0 to 64
priority	Device priority. Sixteen integers are available: 0, 4096, 8192, 12288, 16384, 20480, 24576, 28672, 32768, 36864, 40960, 45056, 49152,53248, 57344 and 61440, which are all multiples of 4096.

Defaults The default instance ID is 0.
The default device priority is 32768.

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the device priority of the Instance to 8192.

```
Ruijie(config-if)# spanning-tree mst 20 priority 8192
```

You can verify your settings by entering the **show spanning-tree mst** instance **interface** *instance-id* command in the privileged EXEC mode.

Related Commands

Command	Description
show spanning-tree mst	Displays the MSTP information of an interface.
spanning-tree mst cost	Sets path cost.
spanning-tree mst port-priority	Sets the port priority of an instance.

Platform Description N/A

11.35 spanning-tree pathcost method

Use this command to configure the path cost of the port. Use the **no** form of this command to restore the default setting.

spanning-tree pathcost method { { **long** [**standard** } | **short** }

no spanning-tree pathcost method

Parameter Description

Parameter	Description
Long [**standard**]	Adopts the 802.1t standard to configure path cost.

	The standard indicates that use the expression recommended by the standard to calculate the cost value.
short	Adopts the 802.1d standard to configure path cost.

Defaults 802.1T standard is adopted to set path cost by default.

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example configures the path cost of the port.

```
Ruijie(config-if)# spanning-tree pathcost method long
```

Related Commands

Command	Description
show spanning-tree interface	Displays the STP configuration of the interface.

Platform Description N/A

11.36 spanning-tree portfast

Use this command to enable the portfast on the interface. Use the disabled form of this command to restore the default setting,

spanning-tree portfast [**disabled**]

Parameter Description

Parameter	Description
disabled	Disables the portfast on the interface.

Defaults This function is disabled by default.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example enables the portfast on the interface.

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# spanning-tree portfast
```

Related

Command	Description

Commands		
	show spanning-tree interface	Displays the STP configuration of the interface.

Platform Description N/A

11.37 spanning-tree portfast bpdufilter default

Use this command to enable the BPDU filter function globally. You can use the **no** form of the command to restore the default setting.

spanning-tree portfast bpdufilter default

no spanning-tree portfast bpdufilter default

Parameter Description	Parameter	Description
	N/A	N/A

Defaults This function is disabled by default,

Command Mode Global configuration mode.

Usage Guide Once the BPDU filter is enabled, the BPDU message is neither received nor sent on the interface. Use the show spanning-tree command to display the configuration.

Configuration Examples The following example enables the BPDU filter function globally.

```
Ruijie(config)# spanning-tree portfast bpdufilter default
```

Related Commands	Command	Description
	show spanning-tree interface	Displays the global STP configuration.

Platform Description N/A

11.38 spanning-tree portfast bpduguard default

Use this command to enable the GPDU guard globally. Use the **no** form of this command to restore the default setting,

spanning-tree portfast bpduguard default

no spanning-tree portfast bpduguard default

Parameter	Parameter	Description

Description

N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode.

Usage Guide Once the BPDU guard is enabled on the interface, it will enter the error-disabled status if the BPDU message arrives at the interface. Use the **show spanning-tree** command to display the configuration.

Configuration Examples The following example enables the GPDU guard globally.

```
Ruijie(config)# spanning-tree portfast bpduguard
default
```

Related Commands

Command	Description
show spanning-tree interface	Displays the global STP configuration.

Platform Description N/A

11.39 spanning-tree portfast default

Use this command to enable the portfast feature on all interfaces globally. Use the **no** form of this command to restore the default setting.

spanning-tree portfast default

no spanning-tree portfast default

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example enables the portfast feature on all interfaces globally.

```
Ruijie(config)# spanning-tree portfast default
```

Related Commands	Command	Description
	show spanning-tree interface	Displays the global STP configuration.

Platform Description N/A

11.40 spanning-tree reset

Use this command to restore the **spanning-tree** configuration to the default setting.

spanning-tree reset

Parameter Description	Parameter	Description
	N/A	N/A

Defaults N/A

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example restores the **spanning-tree** configuration to the default setting.

```
Ruijie(config)# spanning-tree reset
```

Related Commands	Command	Description
	show spanning-tree	Displays the global STP configuration.
	show spanning-tree interface	Displays the STP configuration of the interface.

Platform Description N/A

11.41 spanning-tree tc-guard

Use this command to enable **tc-guard** on the interface to prevent the spread of TC messages. Use the **no** form of this command to disable this function on the interface.

spanning-tree tc-guard

no spanning-tree tc-guard

Parameter	Parameter	Description

Description

N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example enables **tc-guard** on the interface to prevent the spread of TC messages.

```
Ruijie(config)# spanning-tree tc-guard
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.42 spanning-tree tc-protection

Use this command to enable **tc-protection** globally. Use The **no** form of this command to disable this function.

spanning-tree tc- protection

no spanning-tree tc- protection

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example enables **tc-protection** globally.

```
Ruijie(config)# spanning-tree tc-protection
```

Related Commands

Command	Description

N/A	N/A

Platform Description N/A

11.43 spanning-tree tc-protection tc-guard

Use this command to enable tc-guard to prevent TC packets from being flooded. Use the **no** form of this command to restore the default setting.

spanning-tree tc-protection tc-guard

no spanning-tree tc-protection tc-guard

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example enables tc-guard to prevent TC packets from being flooded.

```
Ruijie(config)# spanning-tree tc-protection tc-guard
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.44 spanning-tree tx-hold-count

Use this command to configure the TxHoldCount of the STP, the maximum number of the BPDU messages sent in one second. Use the **no** form of this command to restore the default setting.

spanning-tree tx-hold-count *tx-hold-count*

no spanning-tree tx-hold-count

Parameter Description

Parameter	Description
*tx-hold-coun*t	Maximum number of the BPDU messages sent in one second, in the

	range from 1 to 10.

Defaults The default is 3.

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the maximum number of the BPDU messages sent in one second.

```
Ruijie(config)# spanning-tree tx-hold-count 5
```

Related Commands

Command	Description
show spanning-tree	Displays the global MSTP configuration.

Platform Description N/A

11.45 spanning-tree v-stp enable

Use this command to enable the VSTP function. Use the **no** form of this command to disable VSTP.

spanning-tree v-stp enable

no spanning-tree v-stp enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults VSTP is disabled by default.

Command Mode Global configuration mode

Usage Guide VSTP is only applicable to the M-LAG scenario.

VSTP is supported by STP, RSTP and MSTP. To make VSTP take effect, the following conditions should be met:

1. Enable VSTP on all M-LAG member devices.
2. Configure the identical STP configuration on all M-LAG member devices, for example, device priority, MSTP field configuration, port cost and port priority.
3. Interconnect all M-LAG member devices.

Configuration Examples The following example enables the VSTP function.

```
Ruijie(config)# spanning-tree v-stp enable
```

Related Commands

Command	Description
show spanning-tree v-stp information	Displays the VSTP status.

Platform Description N/A

12 GVRP Commands

12.1 bridge-frame forwarding protocol gvrp

Use this command to enable GVRP PDUs transparent transmission. Use the **no** form of this command to restore the default setting.

bridge-frame forwarding protocol gvrp

no bridge-frame forwarding protocol gvrp

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command mode Global configuration mode

Usage Guide In the IEEE 802.1Q standard, the MAC address 01-80-C2-00-00-21 of GVRP PDUs is reserved for future standardization. In other words, the device following the IEEE 802.1Q standard does not forward GVRP PDUs frames. However, in actual network deployment, GVRP PDUs transparent transmission may be required. For example, the device not enabled with GVRP needs to transmit GVRP PDUs frames transparently to ensure proper GVRP topology calculation.

Configuration Examples The following example enables GVRP PDUs transparent transmission.

```
Ruijie(config)# bridge-frame forwarding protocol gvrp
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

12.2 clear gvrp statistic

Use this command to clear the GVRP statistics for re-counting.

clear gvrp statistics { *interface-id* | **all** }

Parameter Description

Parameter	Description

interface-id	Interface id

Defaults N/A

Command mode Privileged EXEC mode.

Usage Guide Use the **show gvrp statistics** to display the statistics.

Configuration Examples The following example clears GVRP statistics.

```
Ruijie# clear gvrp statistics all
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

12.3 gvrp applicant state

Use this command configures the GVRP advertisement mode on the interface.. Use the **no** form of this command to restore default setting.

gvrp applicant state { **normal** | **non-applicant** }

no gvrp applicant state

Parameter Description

Parameter	Description
normal	The interface sends VLAN advertisement.
non-applicant	The interface does not send VLAN advertisement.

Defaults The interface sends GVRP advertisement by default.

Command mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example configures the GVRP advertisement mode on the interface.

```
Ruijie(config-if)# gvrp applicant state normal
```

Related

Command	Description

Commands		
	show gvrp configuration	Displays the GVRP configurations.

Platform Description N/A

12.4 gvrp dynamic-vlan-creation

Use this command to enable dynamic VLAN creation. Use the **no** form of this command to restore the default setting.

gvrp dynamic-vlan-creation enable

no gvrp dynamic-vlan-creation enable

Parameter Description	Parameter	Description
	N/A	N/A

Defaults This function is disabled by default.

Command mode Global configuration mode.

Usage Guide Use the **show gvrp configuration** to display the configuration.

Configuration Examples The following example enables dynamic VLAN creation.

```
Ruijie(config)# gvrp dynamic-vlan-creation enable
```

Related Commands	Command	Description
	show gvrp configuration	Displays the GVRP configurations.

Platform Description N/A

12.5 gvrp enable

Use this command to enable the GVRP function. Use the **no** form of this command to restore the default setting.

gvrp enable

no gvrp enable

Parameter Description	Parameter	Description

N/A	N/A

Defaults This function is disabled by default.

Command mode Global configuration mode

Usage Guide This command is used to display the configuration.

Configuration Examples The following example enables the GVRP function.

```
Ruijie(config)#gvrp enable
```

Related Commands

Command	Description
show gvrp configuration	Displays the GVRP configurations.

Platform Description N/A

12.6 gvrp registration mode

Use this command to set the registration mode to control whether to enable dynamic VLAN creation/registration/canceling on the port. Use the **no** form of this command to restore the default setting.

gvrp registration mode { **normal** | **disabled** }

no gvrp registration mode

Parameter Description

Parameter	Description
N/A	N/A

Defaults Dynamic VLAN creation/registration/canceling is enabled by default,

Command mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the registration mode.

```
Ruijie(config-if)# gvrp registration mode normal
```

Related Commands

Command	Description

show gvrp configuration	Displays the GVRP configurations.

Platform Description N/A

12.7 gvrp timer

Use this command to set the GVRP timer. Use the **no** form of this command to restore the default setting.

gvrp timer { **join** *timer_value* | **leave** *timer_value* | **leaveall** *timer_value* }

no gvrp timer

Parameter Description

Parameter	Description
join *timer_value*	Controls the maximum delay before sending the advertisement on the port. The actual sending interval is in the range of 0 to the maximum delay.
leave *timer_value*	Controls the waiting time before removing the VLAN from the port with the Leave Message received. If the Join Message is received again within this time range, the port-VLAN relation still exists and the timer becomes invalid. If no Join Message is received on the port, the port status will be the Empty and removed from the VLAN member list.
leave all *timer_value*	Controls the minimum interval of sending the LeaveAll Message on the port. If the LeaveAll Message is received before the timer expires, the timer re-counts. If the timer expires, send the LeaveAll Message on the port and also send this Message to the port, so that the Leave timer begins counting. The actual sending interval ranges from leaveall to leaveall+join.

Defaults Join timer: 200 milliseconds;
Leave timer: 600 milliseconds;
Leaveall timer: 10000 milliseconds.

Command mode Global configuration mode

Usage Guide Use the **show gvrp configuration** to display the configuration.
Use the **no gvrp timer** command to restore **join**, **leave** and **leaveall timer** to default settings.

Configuration Examples The following example configures the join timer.

```
Ruijie(config)# gvrp timer join 200
```

Related Commands

Command	Description
show gvrp configuration	Displays the GVRP configuration.

Platform Description N/A

12.8 l2protocol-tunnel gvrp

Use this command to enable global GVRP PDUs TUNNEL globally. Use the **no** form of this command to restore the default setting.

l2protocol-tunnel gvrp

no l2protocol-tunnel gvrp

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command mode Global configuration mode

Usage Guide If you want to enable global GVRP PDUs TUNNEL, enable GVRP PDUs TUNNEL on the interface first.

Configuration Examples The following example enables GVRP PDUs TUNNEL globally.

```
Ruijie(config)# l2protocol-tunnel gvrp
Ruijie(config)# show l2protocol-tunnel gvrp

L2protocol-tunnel: Gvrp Disable
L2protocol-tunnel destination mac address:01d0.f800.0006
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

12.9 l2protocol-tunnel gvrp enable

Use this command to enable GVRP PDUs TUNNEL on the interface. Use this command to restore

the default setting.

l2protocol-tunnel gvrp enable

no l2protocol-tunnel gvrp enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command mode Interface configuration mode

Usage Guide If you want to enable global GVRP PDUs TUNNEL, enable GVRP PDUs TUNNEL on the interface first.

Configuration Examples The following example enables GVRP PDUs TUNNEL on the interface.

```
Ruijie(config-if-interface-id)# l2protocol-tunnel gvrp enable
Ruijie(config-if-interface-id)# show l2protocol-tunnel gvrp

L2protocol-tunnel: Gvrp Disable
L2protocol-tunnel destination mac address:01d0.f800.0006
GigabitEthernet 0/1 l2protocol-tunnel gvrp enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

12.10 l2protocol-tunnel gvrp tunnel-dmac

Use this command to configure the MAC address for transparent transmission in GVRP PDUs TUNNEL. Use the **no** form of this command to restore the default setting.

l2protocol-tunnel gvrp tunnel-dmac *mac-address*

no l2protocol-tunnel gvrp tunnel-dmac

Parameter Description

Parameter	Description
mac-address	The MAC address for transparent transmission in GVRP PDUs TUNNEL.

Defaults The default is 01d0.f800.0006.

Command mode Global configuration mode

Usage Guide The available MAC address f ranges from 01d0.f800.0006 to 011a.a900.0006.

Configuration Examples The following example configures the MAC address for transparent transmission in GVRP PDUs TUNNEL.

```
Ruijie(config)# l2protocol-tunnel gvrp tunnel-dmac 011a.a900.0006
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

12.11 show gvrp configuration

Use this command to display the GVRP configuration.

show gvrp configuration

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command mode Privileged EXEC mode.

Usage Guide Use the **show gvrp configuration** to display the configuration.

Configuration Examples The following example displays GVRP configuration.

```
Global GVRP Configuration:
GVRP Feature:enabled
GVRP dynamic VLAN creation:enabled
Join Timers(ms):200
Leave Timers(ms):600
Leaveall Timers(ms):1000
Port based GVRP Configuration:
       PORT             Applicant Status        Registration Mode
----------------------  --------------------    ---------------------
```

```
GigabitEthernet 0/2          normal                  normal
```

Field	Description
GVRP Feature	Whether to enable GVRP
GVRP dynamic VLAN creation	Whether to enable dynamic VLAN creation
Join Timers	Join timer
Leave Timers	Leave timer
Leaveall Timers	Leaveall timer
PORT	Port
Applicant Status	Advertisement mode
Registration Mode	Registration mode

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

12.12 show gvrp statistics

Use this command to display the GVRP statistics of one interface or all interfaces.

show gvrp statistics { *interface-id* | **all** }

Parameter Description

Parameter	Description
interface-id	Interface id.

Defaults N/A

Command mode Privileged EXEC mode

Usage Guide Use the **show gvrp statistics** to display the statistics of one interface or all interfaces.

Configuration Examples

```
Ruijie# show gvrp statistics gigabitethernet 1/1
Interface      GigabitEthernet 3/1
RecValidGvrpPdu        0
RecInvalidGvrpPdu      0
RecJoinEmpty    0
RecJoinIn      0
RecEmpty       0
```

```
RecLeaveEmpty   0
RecLeaveIn      0
RecLeaveAll     0
SentGvrpPdu     0
SentJoinEmpty   0
SentJoinIn      0
SentEmpty       0
SentLeaveEmpty  0
SentLeaveIn     0
SentLeaveAll    0
JoinIndicated   0
LeaveIndicated  0
JoinPropagated  0
LeavePropagated  0
```

Field	Description
RecValidGvrpPdu	Number of received valid GPDU packets.
RecInvalidGvrpPdu	Number of received unvalid GPDU packets.
RecJoinEmpty/ SentJoinEmpty	Number of received/sent JoinEmpty messages.
RecJoinIn/ SentJoinIn	Number of received/sent JoinIn messages.
RecEmpty/SentEmpty	Number of received/sent Empty messages.
RecLeaveEmpty/SentLeaveEmpty	Number of received/sent LeaveEmpty messages,
RecLeaveIn/ SentLeaveIn	Number of received/sent LeaveIn messages.
RecLeaveAll/SentLeaveAll	Number of received/sent LeaveAll messages.
SentGvrpPdu	Number of sent GPDU messages.
JoinIndicated/ LeaveIndicated	Number of Join/Leave service requests.
JoinPropagated / LeavePropagated	Number of Join/Leave topology update requests.

Related Commands

Command	Description
clear gvrp statistics	Clears the statistics of one interface or all interfaces.

Platform Description N/A

12.13 show gvrp status

Use this command to display all dynamic VLAN ports generated by GVRP and the dynamic VLAN ports added to the static VLAN.

show gvrp status

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command mode Privileged EXEC mode.

Usage Guide Use the **show gvrp status** command to display the GVRP status.

Configuration Examples The following example displays the GVRP status.

```
Ruijie# show gvrp status
VLAN 1
Dynamic Ports:
DVLAN 2
Dynamic Ports:
```

Field	Description
VLAN	Static VLAN
DVLAN	Dynamic VLAN
Dynamic Ports	Dynamic ports.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

12.14 show l2protocol-tunnel gvrp

Use this command to display GVRP PDUs TUNNEL configuration.

show l2protocol-tunnel gvrp

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide N/A

Configuration Examples The following example displays GVRP PDUs TUNNEL configuration.

```
Ruijie# show l2protocol-tunnel gvrp

L2protocol-tunnel: Gvrp Enable
L2protocol-tunnel destination mac address:011a.a900.0006
GigabitEthernet 0/1 l2protocol-tunnel gvrp enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

13 LLDP Commands

13.1 civic-location

Use this command to configure a common LLDP address. Use the **no** form of this command to delete the address.

civic-location { **country | state | county | city | division | neighborhood | street-group | leading-street-dir | trailing-street-suffix | street-suffix | number | street-number-suffix | landmark | additional-location-information | name | postal-code | building | unit | floor | room | type-of-place | postal-community-name | post-office-box | additional-code** } *ca-word*

no civic-location { **country | state | county | city | division | neighborhood | street-group | leading-street-dir | trailing-street-suffix | street-suffix | number | street-number-suffix | landmark | additional-location-information | name | postal-code | building | unit | floor | room | type-of-place | postal-community-name | post-office-box | additional-code** } *ca-word*

Parameter Description

Parameter	Description
country	Country code, two bytes. For example, the country code of China is CH.
state	Address information, CA type 1
county	CA type 2
city	CA type 3
division	CA type 4
neighborhood	CA type 5
street-group	CA type 6
leading-street-dir	CA type 16
trailing-street-suffix	CA type 17
street-suffix	CA type 18
number	CA type 19
street-number-suffix	CA type 20
landmark	CA type 21
additional-location-information	CA type 22
name	CA type 23
postal-code	CA type 24
building	CA type 25
unit	CA type 26
floor	CA type 27
room	CA type 28
type-of-place	CA type 29
postal-community-name	CA type 30

post-office-box	CA type 31
additional-code	CA type 32
ca-word	Address information

Defaults N/A

Command Mode LLDP Civic address configuration mode

Usage Guide This command is used to configure a common LLDP address in LLDP Civic address configuration mode.

Configuration Examples The following example configures an LLDP Civic Address (ID: 1).

```
Ruijie#config
Ruijie(config)# lldp location civic-location identifier 1
Ruijie(config-lldp-civic)# country CH
Ruijie(config-lldp-civic)# city Fuzhou
```

Related Commands

Command	Description
show lldp location civic-location { **identifier** *id* **| interface** *interface-name* **| static** }	Displays the information about an LLDP Civic address.

Platform Description N/A

13.2 clear lldp statistics

Use this command to clear LLDP statistics.

clear lldp statistics [**interface** *interface-name*]

Parameter Description

Parameter	Description
interface-name	Interface name

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide **interface** parameter: clear the LLDP statistics of the specified interface

Configuration Examples The following example clears LLDP statistics of interface 1.

```
Ruijie# clear lldp statistics interface GigabitEthernet 0/1
Ruijie# show lldp statistics interface GigabitEthernet 0/1
```

```
Lldp statistics information of port [GigabitEthernet 0/1]
------------------------------------------------------------
The number of lldp frames transmitted  : 0
The number of frames discarded    : 0
The number of error frames     : 0
The number of lldp frames received   : 0
The number of TLVs discarded    : 0
The number of TLVs unrecognized    : 0
The number of neighbor information aged out : 0
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

13.3 clear lldp table

Use this command to clear LLDP neighbor information.

clear lldp table [**interface** *interface-name*]

Parameter Description	Parameter	Description
	interface-name	Interface name

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide If the **interface** parameter is specified, the LLDP neighbor information on the specified interface is cleared.

If the **interface** parameter is not specified, the LLDP neighbor information on all interfaces is cleared.

Configuration Examples The following example clears the LLDP neighbor information on interface 1.

```
Ruijie# show lldp neighbors interface GigabitEthernet 0/1
Lldp statistics information of port [GigabitEthernet 0/1]
------------------------------------------------------------
The number of lldp frames transmitted  : 0
The number of frames discarded    : 0
The number of error frames     : 0
The number of lldp frames received   : 0
The number of TLVs discarded    : 0
The number of TLVs unrecognized    : 0
The number of neighbor information aged out : 0
```

```
Ruijie# clear lldp table interface GigabitEthernet 0/1
Ruijie# show lldp neighbors interface GigabitEthernet 0/1
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

13.4 device-type

Use this command to configure the device type. Use the **no** form of this command to restore the default setting.

device-type *device-type*

no device-type

Parameter Description	Parameter	Description
	device-type	Device type. The value ranges from 0 to 2. 0: The device type is DHCP Server. 1: The device type is switch. 2: The device type is LLDP MED terminal.

Defaults The default is 1.

Command Mode LLDP Civic address configuration mode

Usage Guide This command is used to configure the device type in a common LLDP address in LLDP Civic address configuration mode.

Configuration Examples The following example sets the device type to switch.

```
Ruijie#config
Ruijie(config)# lldp location civic-location identifier 1
Ruijie(config-lldp-civic)# device-type 1
```

Related Commands	Command	Description
	show lldp location civic-location { **identifier** *id* **| interface** *interface-name* **| static** }	Displays LLDP Civic Address information.

Platform Description N/A

13.5 lldp enable

Use this command to enable the LLDP globally or on the interface. Use **no** form of this command to disable this function.

lldp enable

no lldp enable

Parameter Description	**Parameter**	**Description**
	N/A	N/A

Defaults This function is enabled by default.

Command Mode Global (or interface) configuration mode

Usage Guide LLDP takes effect on an interface only when LLDP is enabled globally.

Configuration Examples The following example disables LLDP globally and on the interface.

```
Ruijie#config
Ruijie(config)#no lldp enable
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if)# no lldp enable
```

Related Commands	**Command**	**Description**
	show lldp status	Displays LLDP status information.

Platform Description N/A

13.6 lldp encapsulation snap

Use this command to configure the encapsulation format of LLDP packets. Use the **no** form of this command to restore the default setting.

lldp encapsulation snap

no lldp encapsulation snap

Parameter Description	**Parameter**	**Description**
	N/A	N/A

Defaults By default, Ethernet II encapsulation format is used.

Command Interface configuration mode.

Mode

Usage Guide To guarantee the normal communication between local device and neighbor device, the same LLDP packet encapsulation format must be used.

Configuration Examples

```
The following example sets LLDP packet encapsulation format to
SNAP.Ruijie#config
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if)#lldp encapsulation snap
```

Related Commands

Command	Description
show lldp status	Displays LLDP status information.

Platform Description N/A

13.7 lldp error-detect

Use this command to configure the LLDP error detection, including the detection of VLAN configurations on both sides of the link, port state detection, port aggregation configuration detection, MTU configuration detection and loop detection. If any error is detected by LLDP, warning message will be printed to notify the administrator. Use the **no** form of this command to disable this function.

lldp error-detect

no lldp error-detect

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode Interface configuration mode.

Usage Guide LLDP error detection relies on the specific TLV in the LLDP packets exchanged between devices on both sides of the link. To ensure normal functioning of the detection feature, correct TLVs must be advertised.

Configuration Examples The following example configures LLDP error detection.

```
Ruijie#config
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if)#lldp error-detect
```

Related

Command	Description

Commands	show interface status	Displays LLDP status information.

Platform Description N/A

13.8 lldp fast-count

When a new neighbor is detected or when LLDP operating mode changes from shutdown or Rx to TxRx or Tx, to allow the neighbor device to quickly study the information about this device, the fast sending mechanism will be initiated. The fast sending mechanism shortens the LLDPDU sending interval to 1 second and continuously transmits a certain number of LLDPDUs before restoring to the normal transmit interval. Use the **no** form of this command to restore the default setting.

lldp fast-count *value*

no lldp fast-count

Parameter Description

Parameter	Description
value	The number of fast sent LLDP packets, in the range from 1 to 10.

Defaults The default is 3.

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the number of fast sent LLDP packets to 5.

```
Ruijie#config
Ruijie(config)#lldp fast-count 5
```

Related Commands

Command	Description
show interface status	Displays LLDP status information.

Platform Description N/A

13.9 lldp hold-multiplier

Use this command to set the TTL multiplier. Use the **no** form of this command to restore to default setting.

lldp hold-multiplier *value*

no lldp hold-multiplier

Parameter

Parameter	Description

Description		
	value	TTL multiplier, in the range from 2 to 10.

Defaults The default is 4.

Command Mode Global configuration mode.

Usage Guide The value of Time To Live (TLV) in LLDP packet = TTL multiplier × LLDP packet transmit interval + 1. Therefore, the TTL of local device information on the neighbor device can be controlled by adjusting TTL multiplier.

Configuration Examples The following example sets TTL multiplier to 5.

```
Ruijie#config
Ruijie(config)#lldp hold-multiplier 5
```

Related Commands	Command	Description
	show lldp status	Displays LLDP status information.

Platform Description N/A

13.10 lldp ignore pvid-error-detect

Use this command to enable the function of ignoring PVID function. Use the **no** form of this command to disable the function of ignoring PVID function.

lldp ignore pvid-error-detect

no lldp ignore pvid-error-detect

Parameter Description	Parameter	Description
	N/A	N/A

Defaults By default, it is disabled.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example ignores PVID detection globally.

```
Ruijie# configure terminal
Ruijie(config)# lldp ignore pvid-error-detect
```

Platform N/A

Description

13.11 lldp location civic-location identifier

Use this command to create a common address of a device connected to the network in LLDP Civic Address configuration mode. Use the **no** form of this command to delete the address.

lldp location civic-location identifier *id*

no lldp location civic-location identifier *id*

Parameter Description

Parameter	Description
id	ID of a common address of a network device, in the range from 1 to 1024.

Defaults N/A

Command Mode Global configuration mode

Usage Guide This command can be used to enter the LLDP Civic Address configuration mode.

Configuration Examples The following example creates the Civic Address information in LLDP MED-TLV as follows: set *id* to **1**.

```
Ruijie#config
Ruijie(config)#lldp location civic-location identifier 1
Ruijie(config-lldp-civic)#
```

Related Commands

Command	Description
show lldp location civic-location { **identifier** *id* **| interface** *interface-name* **| static** }	Displays the LLDP Civic Address information.

Platform Description N/A

13.12 lldp location elin identifier

Use this command to set an emergency number encapsulated in a Location Identification TLV. Use the **no** form of this command to delete the number.

lldp location elin identifier *id* **elin-location** *tel-number*

no lldp location elin identifier *id*

Parameter Description

Parameter	Description
id	ID of an emergency number, in the range from 1 to 1024.
tel-number	Emergency number, in the range from 10 to 25 bytes.

Defaults N/A

Command Mode Global configuration mode

Usage Guide This command is used to configure an emergency number.

Configuration Examples The following example sets an emergency number.

```
Ruijie#config
Ruijie(config)#lldp location elin identifier 1 elin-location 085283671111
```

Related Commands

Command	Description
show lldp location elin-location { **identifier** *id* **| interface** *interface-name* **| static }**	Displays an LLDP emergency number.

Platform Description N/A

13.13 lldp management-address-tlv

Use this command to configure the management address advertised in LLDP packets. Use the **no** form of this command to disable the advertisement of management address.

lldp management-address-tlv [*ip-address*]

no lldp management-address-tlv

Parameter Description

Parameter	Description
ip-address	The management address advertised in LLDP packets.

Defaults N/A

Command Mode Interface configuration mode.

Usage Guide By default, the management address is advertised in LLDP packets, and is the IPv4 address of the lowest-ID VLAN carried on the port. If IPv4 address is not configured for this VLAN, the next lowest-ID VLAN carried on the port will be tried until the IPv4 address is obtained.

If the IPv4 address is still not found, the IPv6 address of the lowest-ID VLAN carried on the port will be tried.

If the IPv6 address is still not found, the MAC address of the device will be advertised as the management address.

Configuration Examples The following example configures the management address advertised in LLDP packets to 192.168.1.1.

```
Ruijie#config
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if)#lldp management-address-tlv 192.168.1.1
```

Related Commands	Command	Description
	show lldp local-information	Displays LLDP local information

Platform Description N/A

13.14 lldp management-address-tlv global-ip type

Use this command to configure the type of the management address in LLDP packets. Use the **no** or **default** form of this command to restore the default setting.

lldp management-address-tlv global-ip type { interface | loopback }

{ no | default } lldp management-address-tlv global-ip

Parameter Description	Parameter	Description
	interface	Uses the IP address of the interface as the management address.
	loopback	Uses the IP address of the Loopback interface as the management address.

Defaults By default, the management address in LLDP packets is chosen in the following order: the configured management address for LLDP packets, the IP address of the MGMT port, the IP address of the SVI (IP address of the routed port), the local IP address 127.0.0.1, and the MAC address of the system.

Command Mode Global configuration mode

Usage Guide If the **interface** parameter is adopted, the management address, in the order of priority, is: the configured LLDP address for LLDP packets, the IP address of the SVI (IP address of the routed port), the local IP address 127.0.0.1, and the MAC address of the system.

If the **loopback** parameter is adopted, the management address, in the order of priority, is: the configured LLDP address for LLDP packets, the IP address of the Loopback port, the local IP address 127.0.0.1, and the MAC address of the system.

Configuration Examples The following example uses the IP address of the interface as the management address.

```
Ruijie# configure terminal
Ruijie(config)# lldp management-address-tlv global-ip type interface
```

The following example uses the IP address of the Loopback interface as the management address.

```
Ruijie# configure terminal
Ruijie(config)# lldp management-address-tlv global-ip type loopback
```

The following example restores the default setting.

```
Ruijie# configure terminal
Ruijie(config)# no lldp management-address-tlv global-ip
```

Related Commands

Command	Description
show lldp network-policy profile [*profile-num*]	Displays the LLDP network policy.

Platform Description N/A

13.15 lldp mode

Use this command to configure the LLDP operating mode. Use **no** form of this command to restore the default setting.

lldp mode { **rx** | **tx** | **txrx** }

no lldp mode

Parameter Description

Parameter	Description
rx	Only sends LLDPDUs.
tx	Only receives LLDPDUs.
txrx	Sends and receives LLDPDUs.

Defaults The default is **txrx**.

Command Mode Interface configuration mode

Usage Guide Disable LLDP operating mode on the interface. The interface won't send and receive LLDP packets. The precondition for enabling LLDP on the interface is that LLDP has been enabled globally and LLDP operates in tx, rx or txrx mode.

Configuration Examples The following example sets LLDP operating mode to tx on the interface.

```
Ruijie#config
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if)#lldp mode tx
```

Related Commands

Command	Description
show lldp status	Displays LLDP status information

Platform Description N/A

13.16 lldp network-policy profile

Use this command to create an LLDP network policy and enter the LLDP network policy configuration mode. Use the no form of this command to delete the policy.

lldp network-policy profile *profile-num*

no lldp network-policy profile *profile-num*

Parameter Description

Parameter	Description
profile-num	ID of an LLDP network policy, in the range from 1 to 1024.

Defaults N/A

Command Mode Global configuration mode

Usage Guide This command is used to enter the LLDP network policy configuration mode. When this command is run, the policy ID must be specified.

In LLDP network-policy mode, the { **voice** | **voice-signaling** } **vlan** command can be used to configure the specific network policy.

Configuration Examples The following example creates an LLDP network policy whose ID is 1.

```
Ruijie#config
Ruijie(config)#lldp network-policy profile 1
Ruijie(config-lldp-network-policy)#
```

Related Commands

Command	Description
show lldp network-policy profile [*profile-num*]	Displays an LLDP network policy.

Platform Description N/A

13.17 lldp notification remote-change enable

Use this command to configure LLDP Trap. Use the **no** form of this command to restore the default setting.

lldp notification remote-change enable

no lldp notification remote-change enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Interface configuration mode.

Usage Guide By configuring LLDP Trap, the LLDP information of local device (such as information about the detection of new neighbor or the fault on the communication link) can be sent to the network management server. The administrator can monitor the network operation status according to such information.

Configuration Examples The following example configures LLDP Trap.

```
Ruijie#config
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if)#lldp notification remote-change enable
```

Related Commands

Command	Description
show lldp status	Displays LLDP status information.

Platform Description N/A

13.18 lldp timer notification-interval

Use this command to set an interval of sending LLDP Traps. Use the **no** form of this command to restore the default setting.

lldp timer notification-interval *seconds*

no lldp timer notification-interval

Parameter Description

Parameter	Description
seconds	Interval of sending LLDP Traps, in the range from 5 to 3600 in the unit of seconds.

Defaults The default is 5.

Command Mode Global configuration mode.

Usage Guide To prevent excessive LLDP traps from being sent, you can set an interval of sending LLDP Traps. If LLDP information change is detected during this interval, traps will be sent to the network management server.

Configuration Examples The following example sets the interval of sending LLDP Traps to 10 seconds.

```
Ruijie#config
```

```
Ruijie(config)#lldp timer notification-interval 10
```

Related Commands	Command	Description
	show lldp status	Displays LLDP status information.

Platform Description N/A

13.19 lldp timer reinit-delay

Use this command to set port initialization delay. Use the **no** form of this command to restore he default setting.

lldp timer reinit-delay *seconds*

no lldp timer reinit-delay

Parameter Description	Parameter	Description
	seconds	Port initialization delay, in the range from 1 to 10 in the unit of seconds.

Defaults The default is 2.

Command Mode Global configuration mode.

Usage Guide To prevent LLDP from being initialized too frequently due to the frequent operating mode change, you can configure port initialization delay.

Configuration Examples The following example sets LLDP port initialization delay to 3 seconds.

```
Ruijie#config
Ruijie(config)#lldp timer reinit-delay 3
```

Related Commands	Command	Description
	show lldp status	Displays LLDP status information.

Platform Description N/A

13.20 lldp timer tx-delay

Use this command to set LLDP packet transmission delay. Use the **no** form of this command to restore the default setting.

lldp timer tx-delay *seconds*

no lldp timer tx-delay

Parameter Description

Parameter	Description
seconds	LLDP packet transmission delay, in the range from 1 to 8192 in the unit of seconds.

Defaults The default is 2.

Command Mode Global configuration mode.

Usage Guide An LLDP-enabled port will send LLDP packets when the local device information changes. To avoid frequently sending LLDP packets due to the frequent local device information change, configure the LLDP packet transmission delay to control the frequent transmission of LLDP packets.

Configuration Examples The following example sets LLDPDU transmission delay to 3 seconds.

```
Ruijie#config
Ruijie(config)#lldp timer tx-delay 3
```

Related Commands

Command	Description
show lldp status	Displays LLDP status information.

Platform Description N/A

13.21 lldp timer tx-interval

Use this command to set the interval of sending the LLDP packets. Use **no** form of this command to restore the default setting.

lldp timer tx-interval *seconds*

no lldp timer tx-interval

Parameter Description

Parameter	Description
seconds	Interval of sending the LLDP packets, in the range from 5 to 32768 in the unit of seconds.

Defaults The default is 30.

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the interval of sending the LLDP packets to 10 seconds.

```
Ruijie#config
Ruijie(config)#lldp timer tx-interval 10
```

Related Commands

Command	Description
show lldp status	Displays LLDP status information.

Platform Description N/A

13.22 lldp tlv-enable

Use this command to configure the types of advertisable TLVs. Use the **no** form of this command to restore the default setting.

lldp tlv-enable { **basic-tlv** { **all | port-description | system-capability | system-description | system-name** } **| dot1-tlv** { **all | port-vlan-id | protocol-vlan-id** [*vlan-id*] **| vlan-name** [*vlan-id*] } **| dot3-tlv** { **all | link-aggregation | mac-physic | max-frame-size | power** } **| med-tlv** { **all | capability | inventory | location** { **civic-location | elin** } **identifier** *id* **| network-policy profile** [*profile-num*] **| power-over-ethernet** } }

no lldp tlv-enable { **basic-tlv** { **all | port-description | system-capability | system-description | system-name** } **| dot1-tlv** { **all | port-vlan-id | protocol-vlan-id | vlan-name** } **| dot3-tlv** { **all | link-aggregation | mac-physic | max-frame-size | power** } **| med-tlv** { **all | capability | inventory | location** { **civic-location | elin** } **identifier** *id* **| network-policy profile** [*profile-num*] **| power-over-ethernet** } }

Parameter Description

Parameter	Description
basic-tlv	Basic management TLV
port-description	Port Description TLV
system-capability	System Capabilities TLV
system-description	System Description TLV
system-name	System Name TLV
dot1-tlv	802.1 organizationally specific TLV
port-vlan-id	Port VLAN ID TLV
protocol-vlan-id	Port And Protocol VLAN ID TLV
vlan-id	VLAN ID
vlan-name	VLAN Name TLV
vlan-id	VLAN ID corresponding to the specified VLAN name
dot3-tlv	802.3 organizationally specific TLV
link-aggregation	Link Aggregation TLV

mac-physic	MAC/PHY Configuration/Status TLV
max-frame-size	Maximum Frame Size TLV
power	Power Via MDI TLV
med-tlv	LLDP MED TLV
capability	LLDP-MED Capabilities TLV
inventory	Inventory management TLVs, including hardware revision TLVs, firmware revision TLVs, software revision TLVs, serial number TLVs, manufacturer name TLVs, model name TLVs, and asset ID TLVs.
location	Location Identification TLV
civic-location	Common address information about the network device in location identification TLVs.
elin	Encapsulated emergency number
id	Policy ID
network-policy	Network Policy TLV
profile-num	ID of network policy
power-over-ethernet	Extended Power-via-MDI TLV

Defaults By default, all TLVs other than Location Identification TLV can be advertised on the interface for products other than S12000. For the S12000 product series, only basic TLVs and IEEE 802.1 TLVs are advertised. To advertise IEEE 802.3 TLVs and LLDP-MED TLVs, run the **lldp tlv-enable** command.

Command Mode Interface configuration mode

Usage Guide During configuration of basic management TLVs, IEEE 802.1 TLVs, and IEEE 802.3 TLVs, if the **all** parameter is specified, all optional TLVs of the types are advertised.
During configuration of LLDP-MED TLVs, if the **all** parameter is specified, all LLDP-MED TLVs except Location Identification TLVs are advertised.
When configuring LLDP-MED Capability TLVs, configure LLDP-MED MAC/PHY TLVs first. When canceling LLDP-MED MAC/PHY TLVs, cancel LLDP-MED Capability TLVs first.
When configuring LLDP-MED TLVs, configure LLDP-MED Capability TLVs first so that LLDP-MED TLVs of other types can be configured.
To cancel LLDP-MED TLVs, cancel LLDP-MED TLVs of other types first so that LLDP-MED Capability TLVs can be canceled.

Configuration Examples The following example configures all IEEE 802.1 TLVs to be advertised.

```
Ruijie# configure terminal
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)#lldp tlv-enable dot1-tlv all
```

The following example applies LLDP network policy 1 on the 0/1 interface.

```
Ruijie#config
Ruijie(config)#interface gigabitethernet 0/1
```

```
Ruijie(config-if-GigabitEthernet 0/1)#lldp tlv-enable med-tlv network-policy
profile 1
```

The following example applies the LLDP Civic Address (ID: 1) configuration on the 0/1 interface.

```
Ruijie#config
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)#lldp tlv-enable med-tlv location
civic-location identifier 1
```

The following example applies the emergency number (ID: 1) on the 0/1 interface.

```
Ruijie#config
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)#lldp location elin identifier 1
```

Related Commands	Command	Description
	show lldp tlv-config interface	Displays the attributes of advertisable TLVs

Platform Description N/A

13.23 show lldp local-information

Use this command to display the LLDP information of local device. The information will be encapsulated in the TLVs and sent to the neighbor device.

show lldp local-information [**global** | **interface** *interface-name*]

Parameter Description	Parameter	Description
	interface-name	Interface name

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide

- **global** parameter: display the global LLDP information to be sent.
- **Interface** parameter: displays the LLDP information to be sent out the interface specified.
- No parameter: display all LLDP information, including global and interface-based LLDP information.

Configuration Examples The following example displays the device information to be sent to neighbor device.

```
Ruijie# show lldp local-information
```

```
Global LLDP local-information:
 Chassis ID type    : MAC address
 Chassis id     : 00d0.f822.33aa
 System name      : System name
 System description   : System description
 System capabilities supported  : Repeater, Bridge, Router
 System capabilities enabled  : Repeater, Bridge, Router

 LLDP-MED capabilities    : LLDP-MED Capabilities, Network Policy, Location
Identification, Extended Power via MDI-PD, Inventory
 Device class     : Network Connectivity
 HardwareRev     : 1.0
 FirmwareRev     :
 SoftwareRev     : RGOS 10.4(3) Release(94786)
 SerialNum      : 1234942570001
 Manufacturer name    : Manufacturer name
 Asset tracking identifier   :
------------------------------------------------------------
Lldp local-information of port [GigabitEthernet 0/1]
------------------------------------------------------------
 Port ID type     : Interface name
 Port id      : GigabitEthernet 0/1
 Port description    :

 Management address subtype  : 802 mac address
 Management address    : 00d0.f822.33aa
 Interface numbering subtype  :
 Interface number    : 0
 Object identifier    :


 802.1 organizationally information
 Port VLAN ID     : 1
 Port and protocol VLAN ID(PPVID) : 1
  PPVID Supported    : YES
  PPVID Enabled    : NO
 VLAN name of VLAN 1    : VLAN0001
 Protocol Identity    :


 802.3 organizationally information
 Auto-negotiation supported  : YES
 Auto-negotiation enabled   : YES
 PMD auto-negotiation advertised : 100BASE-TX full duplex mode, 100BASE-TX half
```

```
duplex mode
 Operational MAU type    :
 PoE support      : NO
 Link aggregation supported  : YES
 Link aggregation enabled   : NO
 Aggregation port ID    : 0
 Maximum frame Size    : 1500

 LLDP-MED organizationally information
 Power-via-MDI device type   : PD
 Power-via-MDI power source  : Local
 Power-via-MDI power priority  :
 Power-via-MDI power value   :
 Model name      : Model name
```

show lldp local-information command output description:

Field	Description
Chassis ID type	Chassis ID type for identifying the Chassis ID field
Chassis ID	Used to identify the device, and is generally represented with MAC address
System name	Name of the sending device
System description	Description of the sending device, including hardware/software version, operating system and etc.
System capabilities supported	Capabilities supported by the system
System capabilities enabled	Capabilities currently enabled by the system
LLDP-MED capabilities	LLDP-MED capabilities supported by the system
Device class	MED device class, which is divided into 2 categories: network connectivity device and terminal device. Network connectivity device Class I: normal terminal device Class II: media terminal device; besides Class I capabilities, it also supports media streams. Class III: communication terminal device; it supports all the capabilities of Class I and Class II and IP communication.
HardwareRev	Hardware version
FirmwareRev	Firmware version
SoftwareRev	Software version
SerialNum	Serial number
Manufacturer name	Device manufacturer
Asset tracking identifier	Asset tracking ID
Port ID type	Port ID type
Port ID	Port ID
Port description	Port description

Management address subtype	Management address type
Management address	Management address
Interface numbering subtype	Type of the interface identified by the management address
Interface number	ID of the interface identified by the management address
Object identifier	ID of the object identified by the management address
Port VLAN ID	Port VLAN ID
Port and protocol VLAN ID	Port and Protocol VLAN ID
PPVID Supported	Indicates whether port and protocol VLAN is supported
PPVID Enabled	Indicates whether port and protocol VLAN is enabled
VLAN name of VLAN 1	Name of VLAN 1
Protocol Identity	Protocol identifier
Auto-negotiation supported	Indicates whether auto-negotiation is supported
Auto-negotiation enabled	Indicates whether auto-negotiation is enabled
PMD auto-negotiation advertised	Auto-negotiation advertising capability of the port
Operational MAU type	Speed and duplex state of the port
PoE support	Indicates whether POE is supported
Link aggregation supported	Indicates whether link aggregation is supported
Link aggregation enabled	Indicates whether link aggregation is enabled
Aggregation port ID	ID of the link aggregation port
Maximum frame Size	Maximum frame size supported by the port
Power-via-MDI device type	Device type, including: PSE (power sourcing equipment) PD (powered device)
Power-via-MDI power source	Power source type
Power-via-MDI power priority	Power supply priority
Power-via-MDI power value	Available power on port
Model name	Name of model

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

13.24 show lldp location

Use this command to display the common LLDP address or emergency number of the local device.

show lldp location { **civic-location | elin** } { **identifier** *id* **| interface** *interface-name* **| static** }

Parameter Description

Parameter	Description
civic-location	Encapsulates a common address of a network device.
elin	Encapsulates an emergency number.

identifier	Displays one address or emergency number configured.
id	Policy ID of configured information
interface	Displays the address or emergency number on an interface.
interface-name	Interface name
static	Displays all addresses or emergency numbers configured.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide If the policy ID is specified, the specified address or emergency number is displayed.
If the interface name is specified, the address or emergency number configured on the interface is displayed.
If no parameter is specified, all addresses or emergency numbers are displayed.

Configuration Examples The following example displays all addresses.

```
Ruijie# show lldp location civic-location static
LLDP Civic location information
---------------------------
Identifier    : testt
County     : china
City Division    : 22
Leading street direction : 44
Street number    : 68
Landmark    : 233
Name     : liuy
Building    : 19bui
Floor     : 1
Room     : 33
City     : fuzhou
Country    : 86
Additional location  : aaa
Ports     : Gi0/1
---------------------------
Identifier    : tee
---------------------------
```

The following example displays all emergency numbers.

```
Ruijie# show lldp location elin static
Elin location information
---------------------------
```

```
Identifier : t
Elin  : iiiiiiiiii
Ports     : Gi1/0/3
--------------------------
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

13.25 show lldp neighbors

Use this command to display the LLDP information about a neighboring device.

show lldp neighbors [**interface** *interface-name*] [**detail**]

Parameter Description	Parameter	Description
	interface-name	Interface name
	detail	All information about a neighboring device

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide If the **detail** parameter is not specified, the brief information about a neighboring device is displayed.
If the **detail** parameter is specified, the detailed information about a neighboring device is displayed.
If the **interface** parameter is specified, the neighboring device information received on the specified interface is displayed.

Configuration Examples The following example displays the neighboring device information received on all ports.

```
Ruijie# show lldp neighbors detail
Lldp neighbor-information of port [GigabitEthernet 0/1]
 Neighbor index    : 1
 Device type     : LLDP Device
 Update time     : 1hour 53minutes 30seconds
Aging time      : 5seconds

 Chassis ID type    : MAC address
 Chassis id     : 00d0.f822.33cd
 System name     : System name
 System description    : System description
 System capabilities supported  : Repeater, Bridge, Router
```

```
System capabilities enabled  : Repeater, Bridge, Router

Management address subtype  : 802 mac address
Management address    : 00d0.f822.33cd
Interface numbering subtype  :
Interface number    : 0
Object identifier    :


LLDP-MED capabilities    :
Device class     :
HardwareRev     :
FirmwareRev     :
SoftwareRev     :
SerialNum      :
Manufacturer name    :
Asset tracking identifier   :

Port ID type     : Interface name
Port id      : GigabitEthernet 0/1
Port description    :

802.1 organizationally information
Port VLAN ID     : 1
Port and protocol VLAN ID(PPVID) : 1
 PPVID Supported    : YES
 PPVID Enabled    : NO
VLAN name of VLAN 1    : VLAN0001
Protocol Identity    :
802.3 organizationally information
Auto-negotiation supported  : YES
Auto-negotiation enabled   : YES
PMD auto-negotiation advertised : 1000BASE-T full duplex mode, 100BASE-TX full
duplex mode, 100BASE-TX half duplex mode, 10BASE-T full duplex mode, 10BASE-T
half duplex mode
Operational MAU type    : speed(1000)/duplex(Full)
PoE support     : NO
Link aggregation supported  : YES
Link aggregation enabled   : NO
Aggregation port ID    : 0
Maximum frame Size    : 1500
LLDP-MED organizationally information
Power-via-MDI device type   :
Power-via-MDI power source  :
```

```
 Power-via-MDI power priority  :
Power-via-MDI power value   :
```

Description of fields:

Field	Description
Neighbor index	Neighbor index
Device type	Type of neighboring device
Update time	Latest update time of neighbor information
Aging time	Aging time of a neighbor, namely the time after which a neighbor is aged and deleted
Chassis ID type	Chassis ID type
Chassis ID	Used to identify a device. Usually, a MAC address is used.
System name	Device name
System description	Device description, including hardware/software version and operating system
System capabilities supported	Functions supported by the system
System capabilities enabled	Functions enabled by the system
Management address subtype	Type of management address
Management address	Management address
Interface numbering subtype	Interface type of management address
Interface number	Interface ID of management address
Object identifier	Object ID of management address
Device class	MED device type: network connectivity device and terminal device Network connectivity device: Class I: general terminal device Class II: media terminal device, including capabilities of Class I and supporting media stream Class III: communication terminal device, including capabilities of Class I and Class II and supporting IP communication
HardwareRev	Hardware version
FirmwareRev	Firmware version
SoftwareRev	Software version
SerialNum	Serial number
Manufacturer name	Manufacturer name
Asset tracking identifier	Asset ID
Port ID type	Port ID type
Port ID	Port ID
Port description	Port description
Port VLAN ID	VLAN ID of a port
Port and protocol VLAN ID	Port and protocol VLAN ID
PPVID Supported	Whether port and protocol VLAN is supported

PPVID Enabled	Whether port and protocol VLAN is enabled
VLAN name of VLAN 1	VLAN 1 name
Protocol Identity	Protocol ID
Auto-negotiation supported	Whether auto-negotiation is supported
Auto-negotiation enabled	Whether auto-negotiation is enabled
PMD auto-negotiation advertised	Port auto-negotiation advertisement capability
Operational MAU type	Rate and duplex status of port auto-negotiation
PoE support	Whether POE is supported
Link aggregation supported	Whether link aggregation is supported
Link aggregation enabled	Whether link aggregation is enabled
Aggregation port ID	ID of link aggregation port
Maximum frame Size	Maximum frame length supported by a port
Power-via-MDI device type	Device type, including: ● PSE ● PD
Power-via-MDI power source	Power type
Power-via-MDI power priority	Power supply priority
Power-via-MDI power value	Power value of a port where power is supplied

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

13.26 show lldp network-policy profile

Use this command to display the information about an LLDP network policy.

show lldp network-policy profile [*profile-num*]

Parameter Description

Parameter	Description
profile-num	ID of a network policy, in the range from 1 to 1024.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide If *profile-num* is specified, the information about the specified network policy is displayed.
If no parameter is specified, the information about all network policies is displayed.

Configuration The following example displays the information about a network policy.

Examples

```
Ruijie# show lldp network-policy profile
Network Policy Profile 1
 voice vlan 2 cos 4 dscp 6
 voice-signaling vlan 2000 cos 4 dscp 6
 Interface:
 GigabitEthernet1/0/16
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

13.27 show lldp statistics

The following example displays LLDP statistics.

show lldp statistics [**global** | **interface** *interface-name*]

Parameter Description

Parameter	Description
interface-name	Interface name

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide

- **global** parameter: display the global LLDP statistics.
- **Interface** parameter: display the LLDP statistics of the specified interface.

Configuration Examples The following example displays all LLDP statistics.

```
Ruijie# show lldp statistics
lldp statistics global Information:
Neighbor information last changed time  : 1hour 52minute 22second
The number of neighbor information inserted : 2
The number of neighbor information deleted : 0
The number of neighbor information dropped : 0
The number of neighbor information age out : 1

------------------------------------------------------------
Lldp statistics information of port [GigabitEthernet 0/1]
------------------------------------------------------------
```

```
The number of lldp frames transmitted  : 26
The number of frames discarded    : 0
The number of error frames     : 0
The number of lldp frames received   : 12
The number of TLVs discarded    : 0
The number of TLVs unrecognized    : 0
The number of neighbor information aged out : 0
```

show lldp statistics command output description:

Field	Description
Neighbor information last change time	Time the neighbor information is latest updated
The number of neighbor information inserted	Number of times of adding neighbor information
The number of neighbor information deleted	Number of times of removing neighbor information
The number of neighbor information dropped	Number of times of dropping neighbor information
The number of neighbor information aged out	Number of the neighbor information entries that have aged out
The number of lldp frames transmitted	Total number of the LLDPDUs transmitted
The number of frames discarded	Total number of the LLDPDUs discarded
The number of error frames	Total number of the LLDP error frames received
The number of lldp frames received	Total number of the LLDPDUs received
The number of TLVs discarded	Total number of the LLDP TLVs dropped
The number of TLVs unrecognized	Total number of the LLDP TLVs that cannot be recognized
The number of neighbor information aged out	Number of the neighbor information entries that have aged out

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

13.28 show lldp status

Use this command to display LLDP status information.

show lldp status [**interface** *interface-name*]

Parameter Description

Parameter	Description
interface-name	Interface name

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide **interface** parameter: display the LLDP status information of the specified interface.

Configuration Examples The following example displays LLDP status information of all ports.

```
Ruijie# show lldp status
Global status of LLDP    : Enable
Neighbor information last changed time : 1hour 52minute 22second
Transmit interval     : 30s
Hold multiplier     : 4
Reinit delay      : 2s
Transmit delay      : 2s
Notification interval    : 5s
Fast start counts     : 3
------------------------------------------------------------
Port [GigabitEthernet 0/1]
------------------------------------------------------------
Port status of LLDP   : Enable
Port state     : UP
Port encapsulation   : Ethernet II
Operational mode   : RxAndTx
Notification enable   : NO
Error detect enable   : YES
Number of neighbors   : 1
Number of MED neighbors   : 0
```

show lldp status command output description:

Field	Description
Global status of LLDP	Whether LLDP is globally enabled
Neighbor information last changed time	Time the neighbor information is latest updated
Transmit interval	LLDPDU transmit interval
Hold multiplier	TTL multiplier
Reinit delay	Port re-initialization delay
Transmit delay	LLDPDU transmit delay
Notification interval	Interval for sending LLDP Traps
Fast start counts	The number of fast sent LLDPDUs
Port status of LLDP	Whether LLDP is enabled on the port
Port state	Link status of port: UP or DOWN

Port encapsulation	LLDPDU encapsulation format
Operational mode	Operating mode of LLDP
Notification enable	Whether LLDP Trap is enabled on the port
Error detect enable	Whether error detection is enabled on the port
Number of neighbors	Number of neighbors
Number of MED neighbors	Number of MED neighbors

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

13.29 show lldp tlv-config

Use this command to display the advertisable TLV configuration of a port.

show lldp tlv-config [**interface** *interface-name*]

Parameter Description

Parameter	Description
interface-name	Interface name

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide **Interface** parameter: display the LLDP TLV configuration of the specified interface.

Configuration Examples The following example displays TLV information of port 1.

```
Ruijie# show lldp tlv-config interface GigabitEthernet 0/1
LLDP tlv-config of port [GigabitEthernet 0/1]
-------------------------------------------------
   NAME    STATUS DEFAULT
--------------------------------- ------ -----------
Basic optional TLV:
Port Description TLV   YES YES
System Name TLV    YES YES
System Description TLV   YES YES
System Capabilities TLV   YES YES
Management Address TLV   YES YES

IEEE 802.1 extend TLV:
```

```
Port VLAN ID TLV    YES YES
Port And Protocol VLAN ID TLV  YES YES
VLAN Name TLV     YES YES

IEEE 802.3 extend TLV:
MAC-Physic TLV    YES YES
Power via MDI TLV    YES YES
Link Aggregation TLV   YES YES
Maximum Frame Size TLV   YES YES

LLDP-MED extend TLV:
Capabilities TLV    YES YES
Network Policy TLV   YES YES
Location Identification TLV  NO  NO
Extended Power via MDI TLV  YES YES
Inventory TLV     YES YES
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

13.30 { voice | voice-signaling } vlan

Use this command to configure the LLDP network policy. Use the **no** form of this command to delete the policy.

{ **voice | voice-signaling** } **vlan** { { *vlan-id* [**cos** *cvalue* **| dscp** *dvalue*] } | { **dot1p** [**cos** *cvalue* **| dscp** *dvalue*] } **| none | untagged** }

no { **voice | voice-signaling** } **vlan**

Parameter Description

Parameter	Description
voice	Voice application
voice-signaling	Voice-signaling application
vlan-id	(Optional) VLAN ID of voice flow. The value ranges from 1 to 4094.
cos	(Optional) Class of service
cvalue	(Optional) cos of the configured voice flow. The value ranges from 0 to 7, and the default value is **5**.
dscp	(Optional) Differentiated services code point
dvalue	(Optional) DSCP value of the configured voice flow. The value ranges from 0 to 63. The default value is 46.
dot1p	(Optional) 802.1p priority tagging. The tag frame includes user_priority and vlan id is 0.
none	(Optional) The network policy is not advertised. VoIP determines the network policy based on its configuration.
untagged	(Optional) The untag frame is sent in the voice vlan in VoIP. In this case, the value of vlan id and cos are ignored.

Defaults N/A

Command Mode LLDP network policy configuration mode

Usage Guide In the LLDP network policy configuration mode, configure the LLDP network policy.

Configuration Examples The following example configures the LLDP network policy (profile-num is 1).

```
Ruijie#config
Ruijie(config)#lldp network-policy profile 1
Ruijie(config-lldp-network-policy)# voice vlan untagged
Ruijie(config-lldp-network-policy)# voice-signaling vlan 3 cos 4
Ruijie(config-lldp-network-policy)# voice-signaling vlan 3 dscp 6
```

Related Commands

Command	Description
show lldp network-policy profile [*profile-num*]	Displays the LLDP network policy.

Platform N/A

Description

14 QinQ Commands

14.1 dot1q new-outer-vlan vid translate old-outer-vlan vid inner-vlan v-list

Use this command to modify the policy list of outer vid based on the inner Tag VID and outer Tag VID on the access, trunk, hybrid, uplink port. Use the **no** form of this command to restore the default setting.

dot1q new-outer-vlan *vid* **translate old-outer-vlan** *vid* **inner-vlan** *v_list*

no dot1q new-outer-vlan *vid* **translate old-outer-vlan** *vid* **inner-vlan** *v_list*

Parameter Description

Parameter	Description
v_list	Vid list of the
vid	Vid of outer tag.
no	Removes the setting.

Defaults The policy list is null by default.

Command Mode Interface configuration mode.

Usage Guide N/A.

Configuration Examples The following example modifies the vid to 3888 when the input packets inner tag vid.

```
Ruijie(config)# vlan 1888, 3888
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# dot1q new-outer-vlan 3888 translate old-outer-vlan 1888
inner-vlan 2001-3000
Ruijie(config-if)# end
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

14.2 dot1q outer-vid *vid* register inner-vid *v-list*

Use this command to configure the add policy list of outer vid based on protocol on tunnel port. Use

the **no** form of this command to restore the default setting.

dot1q outer-vid *vid* **register inner-vid** *v_list*

no dot1q outer-vid *vid* **register inner-vid** *v_list*

Parameter Description

Parameter	Description
v_list	Inner vlan id list
vid	Outer vlan id list
no	Removes the settings.

Defaults The policy list is null by default.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example specifies vid in the tag of input message as 4-22 and setss the vid to 3.

```
Ruijie#configure
Ruijie(config)#interface gigabitEthernet 0/1
Ruijie(config-if)#switchport mode dot1q-tunnel
Ruijie(config-if)#dot1q outer-vid 3 register inner-vid 4-22
Ruijie(config-if)#end
```

Related Commands

Command	Description
show registration-table [**interface** *intf-id*]	N/A

Platform Description N/A

14.3 dot1q relay-vid *vid* translate local-vid *v-list*

Use this command to configure the modify policy list of outer vid based on protocol on access, trunk, hybrid port. Use the **no** form of this command to restore the default setting.

dot1q relay-vid *vid* **translate local-vid** *v-list*

no dot1q relay-vid *vid* **translate local-vid** *v-list*

Parameter Description

Parameter	Description
v_list	Outer vlan list of input message
vid	Modified outer vlan id list
no	Removes the settings.

Defaults The policy list is null by default.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example specifies vid in the outer tag of input message as 10-20 and sets the vid to 100.

```
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport mode access
Ruijie(config-if)# dot1q relay-vid 100 translate local-vid 10-20
Ruijie(config-if)# end
```

Related Commands

Command	Description
show translation-table [interface *intf-id*]	N/A

Platform Description N/A

14.4 dot1q relay-vid *vid* translate inner-vid *v-list*

Use this command to configure the modify policy list of outer vid based on protocol on access, trunk, hybrid port. Use the **no** form of this command to restore the default setting.

dot1q relay-vid *vid* **translate inner-vid** *v-list*

no dot1q relay-vid *vid* **translate inner-vid** *v-list*

Parameter Description

Parameter	Description
v_list	Outer vlan list of input message
vid	Modified outer vlan id list
no	Removes the settings.

Defaults The policy list is null by default.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration The following example configures vid in the outer tag of input message as 10-20 and sets the vid to

Examples 100.

```
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport mode access
Ruijie(config-if)# dot1q relay-vid 100 translate inner-vid 10-20
Ruijie(config-if)# end
```

Related Commands

Command	Description
show translation-table [interface *intf-id*]	N/A

Platform Description N/A

14.5 dot1q-tunnel cos inner-cos-value remark-cos outer-cos-value

Use this command to map the priority from the outer tag to the inner tag for the packets on the interface. Use the **no** form of this command to restore the default setting.

dot1q-tunnel cos inner-cos-value remark-cos outer-cos-value

no dot1q-tunnel cos inner-cos-value remark-cos outer-cos-value

Parameter Description

Parameter	Description
no	Cancels the priority mapping of the packets on the interface.

Defaults The policy list is null by default.

Command Mode Interface configuration mode.

Usage Guide If the QoS policy based on the CoS value is set for the service provider's network to which a user network connects, the CoS value of the outer tag can be set to different values based on the data packet importance. In this case, important services can be preferentially processed and transmitted.

Configuration Examples The following example configures the priority mapping from the outer tag to the inner tag.

```
ruijie# configure
ruijie(config)# interface gigabitEthernet 0/2
ruijie(config-if)# dot1q-tunnel cos 3 remark-cos 5
ruijie(config-if)# end
```

Related Commands

Command	Description
show interface intf-name remark	N/A

Platform Description N/A

14.6 frame-tag tpid

Use this command to set the packet TPID compatible with the manufacturer TPID. Use the **no** form of this command to restore the default setting.

frame-tag tpid *tpid*

no frame-tag tpid

Parameter Description

Parameter	Description
tpid	Packet TPID.
no	Removes the setting.

Defaults The default is 0x8100.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the packet TPID compatible with the manufacturer TPID.

```
Ruijie(config)# interface g0/3
Ruijie(config-if)# frame-tag tpid 0x9100
Ruijie(config-if)# end
Ruijie# show frame-tag tpid
Port    tpid
------  ---------
Gi0/3    0x9100
```

Related Commands

Command	Description
show frame-tag tpid	N/A

Platform Description N/A

14.7 inner-priority-trust enable

Use this command to copy the priority of the inner tag to the outer tag of the packets on the interface. Use the **no** form of this command to restore the default setting.

inner-priority-trust enable

no inner-priority-trust enable

Parameter Description

Parameter	Description
no	Removes the settings.

Defaults This function is disabled by default.

Command Mode Interface configuration mode.

Usage Guide If the QOS policy is configured based on the cos value of the user's VLAN tag for the service provider's network to which a user network connects, the user's VLAN tag priority can be copied to the outer VLAN tag, so that the user's packets are encapsulated with the outer VLAN tag and have the same priority as the user's VLAN tag. In this case, the user's packets can be preferentially processed and transmitted on the service provider's network.

Configuration Examples The following example copies the priority of the inner tag to the outer tag of the packets on the interface.

```
Ruijie(config)# interface gigabitEthernet 0/2
Ruijie(config-if)# inner-priority-trust enable
```

Related Commands

Command	Description
show inner-priority-trust	N/A

Platform Description N/A

14.8 l2protocol-tunnel

Use this command to set the dot1q-tunnel port to receive L2 protocol message. Use the **no** form of this command to disable this function.

l2protocol-tunnel { **stp | gvrp** }

no l2protocol-tunnel { **stp | gvrp** }

Parameter Description

Parameter	Description
stp	Receives stp message.
gvrp	Receives gvrp message.
no	Removes the settings.

Defaults N/A

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example enables the function of receiving L2 protocol gvrp and stp.

```
Ruijie#configure
Ruijie(config)# l2protocol-tunnel stp
Ruijie(config)# l2protocol-tunnel gvrp
Ruijie(config)#end
```

Related Commands

Command	Description
show l2protocol-tunnel { gvrp | stp }	N/A

Platform Description N/A

14.9 l2protocol-tunnel enable

Use this command to enable transparent transmission of L2 protocol message. Use the **no** form of this command to restore the default setting.

l2protocol-tunnel { **stp | gvrp** } **enable**

no l2protocol-tunnel { **stp | gvrp** } **enable**

Parameter Description

Parameter	Description
stp	Transparently transmits stp message.
gvrp	Transparently transmits gvrp message.
no	Removes the settings.

Defaults N/A

Command Mode Intereface configuration mode.

Usage Guide N/A

Configuration Examples Here is an example of enabling transparent transmission of L2 protocol message :

```
Ruijie#configure
Ruijie(config)# interface fa 0/1
Ruijie(config-if)# l2protocol-tunnel gvrp enable
```

```
Ruijie(config-if)#end
```

Related Commands

Command	Description
show l2protocol-tunnel { gvrp | stp }	N/A

Platform Description N/A

14.10 l2protocol-tunnel tunnel-dmac

Use this command to set the MAC address for the transparent transmission of the corresponding protocol messages. Use the no form of this command to restore the default setting.

l2protocol-tunnel { **stp|gvrp** } **tunnel-dmac** *mac-address*

no l2protocol-tunnel { **stp|gvrp** } **tunnel-dmac** *mac-address*

Parameter Description

Parameter	Description
stp	Sets the STP transparent transmission address.
gvrp	Sets the GVRP transparent transmission address.
mac-address	Sets the transparent transmission address.
no	Restore the transparent transmission address to the default value. If OUI is 001aa9 or 00d0f8, the first three bytes of the default transparent transmission address is 01d0f8, the last three bytes is 000005 for STP and 000006 for GVRP. If OUI is not 001aa9 and 00d0f8, the first three bytes is 01d0f8, the last three bytes is 000005 for STP and 000006 for GVRP.

Defaults The first three bytes of the address are 01d0f8 and the last three bytes are 000005 for **stp** and 000006 for **gvrp** by default.

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the MAC address for the L2-protocol transparent transmission function:

```
Ruijie(config-if)# l2protocol-tunnel gvrp tunnel-dmac 011AA9 000005
Ruijie(config-if)#end
```

Related Commands

Command	Description
show l2protocol-tunnel { gvrp | stp }	N/A

Platform Description N/A

14.11 mac-address-mapping index-id source-vlan src-vlan-list destination-vlan dst-vlan-id

Use this command to copy the MAC address dynamically-learned from the source VLAN to the destination VLAN. Use the **no** form of this command to restore the default setting.
mac-address-mapping *index-id* **source-vlan** *src-vlan-list* **destination-vlan** *dst-vlan-id*
no mac-address-mapping *index-id* **source-vlan** *src-vlan-list* **destination-vlan** *dst-vlan-id*

Parameter Description

Parameter	Description
index-id	Policy ID of copying MAC addresses.
src-vlan-list	Source VLAN list of copying MAC addresses.
dst-vlan-id	Destination VLAN ID of copying MAC addresses.

Defaults This function is disabled by default.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example copies the MAC addresses dynamically-learned from the source VLANs 1-3 to the destination VLAN 5.

```
ruijie#configure
ruijie(config)# interface gigabitEthernet 0/2
ruijie(config-if)# mac-address-mapping 1 source-vlan  1-3 destination-vlan  5
ruijie(config-if)#end
```

Related Commands

Command	Description
show interface mac-address-mapping x	N/A

Platform Description N/A

14.12 show dot1q-tunnel

Use this command to display whether dot1q-tunnel of interface is enabled or not.

show dot1q-tunnel [**interface** *intf-id*]

Parameter Description

Parameter	Description
intf-id	The specified interface.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays whether dot1q-tunnel of interface is enabled or not.

```
Ruijie# show dot1q-tunnel
Ports   Dot1q-tunnel
-----   ---------
Gi0/1    Enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description

14.13 show frame-tag tpid

Use this command to display the configuration of interface tpid.

show frame-tag tpid [**interface <***intf-id***>**]

Parameter Description

Parameter	Description
intf-id	Specifies the interface.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration The following example displays the configuration of interface tpid.

Examples

```
Ruijie# show frame-tag tpid
Ports    tpid
-----  ---------
Gi0/1    0x9100
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

14.14 show inner-priority-trust

Use this command to display whether the priority copy function is enabled.

show inner-priority-trust

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays whether the priority copy function is enabled.

```
Ruijie# show inner-priority-trust
Port    inner-priority-trust
----    ----------
Gi0/1    enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description

14.15 show interface dot1q-tunnel

Use this command to display the VLAN configuration on the dot1q-tunnel port.

show interface [*intf-Id*] **dot1q-tunnel**

Parameter Description

Parameter	Description
intf-id	Specifies the interface.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the VLAN configuration on the dot1q-tunnel port.

```
Ruijie# show interface dot1q-tunnel
Interface: Gi0/3
Native vlan: 10
Allowed vlan list: 4-6, 10, 30-60
Tagged vlan list: 4, 6, 30-60
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

14.16 show interfaces remark

Use this command to display the priority mapping configuration.

show interfaces [*intf-id*] **remark**

Parameter Description

Parameter	Description
intf-id	specifies an interface

Defaults N/A

Command Mode Any mode

Usage Guide N/A

Configuration Examples The following example displays the priority mapping configuration.

```
Ruijie# show interfaces remark
Ports         Type        From value  To value
------------ ----------- ----------- --------
Gi0/1         Cos-To-Cos  3           5
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

14.17 show interface mac-address-mapping

Use this command to display the MAC address mapping configuration.

show interface mac-address-mapping *index-id*

Parameter Description

Parameter	Description
index-id	Policy ID of copying MAC addresses.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the MAC address mapping configuration.

```
ruijie# show interface mac-address-mapping 1
Ports         Destination-VID  Source-VID-list
------------ ---------------- ---------------
Gi0/1         5                1-3
```

Related Commands

Command	Description
N/A	N/A

Platform N/A

Description

14.18 show interfaces vlan-mapping

Use this command to display the VLAN mapping configuration.

show interfaces vlan-mapping

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Any mode

Usage Guide N/A

Configuration Examples The following example displays the VLAN mapping configuration.

```
ruijie# show interfaces vlan-mapping
Ports         Type    Status Destination-VID  Source-VID-list
------------  ------  -----  ---------------- ---------------
Gi0/1         in        active        5                3
Gi0/1         out       active        3                5
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

14.19 show l2protocol-tunnel

Use this command to display transparent transmission configuration of L2 protocol.

show l2protocol-tunnel { **gvrp** | **stp** }

Parameter Description

Parameter	Description
gvrp	Displays configuration of transparently transmitting gvrp protocol.
stp	Displays configuration of transparently transmitting stp protocol.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays transparent transmission configuration of L2 protocol.

```
Ruijie# show l2protocol-tunnel stp
L2protocol-tunnel: Stp Enable
Ruijie# show l2protocol-tunnel gvrp
L2protocol-tunnel: gvrp Disable
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

14.20 show registration-table

Use this command to display vid add policy list of prorocol-based dot1q-tunnel port.

show registration-table [**interface** *intf-id*]

Parameter Description

Parameter	Description
intf-id	Specifies the interface.

Defaults Null policy list.

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays vid add policy list of prorocol-based dot1q-tunnel port.

```
Ruijie# show registration-table
Ports      Type    Outer-VID  Inner-VID-list
---------   ------  ------- ------------------
Gi0/7        Add-outer  5          7-10,15,20-30
```

Related

Command	Description

Commands

N/A	N/A

Platform Description N/A

14.21 show traffic-redirect

Use this command to display flow-based vid change or add policy list.

show traffic-redirect [**interface** *intf-id*]

Parameter Description

Parameter	Description
intf-id	Specifies the interface.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays flow-based vid change or add policy list.

```
Ruijie# show traffic-redirect
Ports           Type           VID   Match-filter
------------ ----------- ---- ------------
Gi0/3         Mod-outer    23   11
Gi0/3         Mod-outer    3    4
Gi0/3         Mod-outer    6    5
Gi0/3         Mod-inner    8    inner-to-8
Gi0/6         Mod-inner    9    100
Gi0/7         Nested-vid   13   nest-13
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

14.22 show translation-table

Use this command to display vid modify policy list of prorocol-based access, trunk, hybrid port.

show translation-table [**interface** *intf-id*]

Parameter Description

Parameter	Description
intf-id	Specifies the interface.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays vid modify policy list of prorocol-based access, trunk, hybrid port.

```
Ruijie# show translation-table
Ports       Type      Relay-VID  Old-local  Local\inner-VID-list
----------- ---------- ---------- ---------- ------------------
Gi0/7       Inner-CVID 8         N/A       10-20
Gi0/7       Local-SVID 1001      N/A       30-60
Gi0/7       In+Out     8         20        50
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

14.23 switchport dot1q-tunnel allowed vlan

Use this command to configure the allowed VLAN of dot1q-tunnel. Use the no form of this command to restore the default setting.

switchport dot1q-tunnel allowed vlan [**add**] { **tagged|untagged** } *v_list*

switchport dot1q-tunnel allowed vlan remove *v_list*

no switchport dot1q-tunnel allowed vlan

Parameter Description

Parameter	Description
add	Add allowed VLAN.
tagged	Tag-carried.
untagged	Not tag-carried.
v_list	vlan id list.
no	Remove the settings.

Defaults The default is **untagged** 1.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example specifies vlan 3-6 of dot1q-tunnel port as allowed VLAN and outputting the frame with tag.

```
Ruijie(config)#interface gigabitEthernet 0/1
Ruijie(config-if)#switchport dot1q-tunnel allowed vlan tagged 3-6
Ruijie(config)#end
```

Related Commands

Command	Description
show interface dot1q-tunnel	N/A

Platform Description N/A

14.24 switchport dot1q-tunnel native vlan

Use this command to configure the default vlan id of dot1q-tunnel. Use the no form of this command to restore the default setting.

switchport dot1q-tunnel native vlan *vid*

no switchport dot1q-tunnel native vlan

Parameter Description

Parameter	Description
vid	Configures default vlan id.
no	Configures default vlan as 1.

Defaults The default is VLAN 1.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example specifies default VLAN of dot1q-tunnel port as 8.

```
Ruijie(config)#interface gigabitEthernet 0/1
Ruijie(config-if)#switchport dot1q-tunnel native vlan 8
```

```
Ruijie(config)#end
```

Related Commands

Command	Description
show interface dot1q-tunnel	N/A

Platform Description N/A

14.25 switchport mode dot1q-tunnel

Use this command to configure the interface as the dot1q-tunnel interface. Use the **no** form of this command to restore the default setting.

switchport mode dot1q-tunnel

no switchport mode

Parameter Description

Parameter	Description
no	Deletes the corresponding dot1q-tunnel interface configuration.

Defaults The interface is not a tunnel port by default.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example configures the interface as the dot1q-tunnel interface.

```
Ruijie(config)# interface gi 0/1
Ruijie(config-if)# switchport access vlan 22
Ruijie(config-if)# switchport mode dot1q-tunnel
Ruijie(config)# end
```

Related Commands

Command	Description
show vlan	N/A

Platform Description N/A

14.26 traffic-redirect access-group *acl* inner-vlan *vid* out

Use this command to configure the modification policy of inner vid based on flow for the packets outputted from the access, trunk, hybrid port. Use the **no** form of this command to restore the default setting.

traffic-redirect access-group *acl* **inner-vlan** *vid* **out**

no traffic-redirect access-group *acl* **inner-vlan**

Parameter Description

Parameter	Description
acl	Flow matching.
vid	Modified inner vid
no	Removes the settings.

Defaults N/A

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example specifies the outer vid of outgoing messages whose source address is 1.1.1.2 as 6,

```
Ruijie#configure
Ruijie(config)#ip access-list standard to_6
Ruijie(config-std-nacl)#permit host 1.1.1.2
Ruijie(config-std-nacl)#exit
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# traffic-redirect access-group to_6 inner-vlan 6 out
Ruijie(config-if)# end
```

Related Commands

Command	Description
show traffic-redirect	N/A

Platform Description N/A

14.27 traffic-redirect access-group acl nested-vlan *vid* in

Use this command to configure vid add policy list based on flow on dot1q-tunne port. Use the **no** form of this command to restore the default setting.

traffic-redirect access-group *acl* **nested-vlan** *vid* **in**
no traffic-redirect access-group *acl* **nested –vlan**

Parameter Description

Parameter	Description
acl	Flow matching.
vid	vid list to be added.
no	Removes the settings.

Defaults The policy list is null by default.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example specifies the vid of input message whose source address is 1.1.1.3 as 9.

```
Ruijie#configure
Ruijie(config)#ip access-list standard 20
Ruijie(config-std-nacl)#permit host 1.1.1.3
Ruijie(config-std-nacl)#exit
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport mode dot1q-tunnel
Ruijie(config-if)# traffic-redirect access-group 20 nested-vlan 10 in
Ruijie(config-if)# end
```

Related Commands

Command	Description
show traffic-redirect	N/A

Platform Description N/A

14.28 traffic-redirect access-group acl outer-vlan *vid* in

Use this command to configure the modify policy list of outer vid based on flow on access，trunk，hybrid port. Use the **no** form of this command to restore the default setting.
traffic-redirect access-group *acl* **outer-vlan** *vid* **in**
no traffic-redirect access-group *acl* **outer-vlan**

Parameter Description

Parameter	Description
acl	Flow matching.

vid	Modified outer vid list
no	Removes the settings.

Defaults The policy list is null by default.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example specifies outer vid of input message whose source address is 1.1.1.1 as 3.

```
Ruijie# configure
Ruijie(config)#ip access-list standard 2
Ruijie(config-std-nacl)# permit host 1.1.1.1
Ruijie(config-std-nacl)# exit
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# traffic-redirect access-group 2 outer-vlan 3 in
Ruijie(config-if)# end
```

Related Commands

Command	Description
show traffic-redirect	N/A

Platform Description N/A

14.29 vlan-mapping-in vlan src-vlan-list remark dest-vlan

Use this command to set policy table mapped with the VLAN in the ingress direction on Access, Trunk, Hybrid, and Uplink ports and change the VLAN ID of the input packets as the specified VLAN ID before forwarding the packets. Use the **no** or **default** form of this command to restore the default setting.

vlan-mapping-in vlan *src-vlan-list* **remark** *dest-vlan*

no vlan-mapping-in vlan *src-vlan-list* **remark** *dest-vlan*

default vlan-mapping-in vlan *src-vlan-list* **remark** *dest-vlan*

Parameter Description

Parameter	Description
src-vlan-list	Vid list of the input packets.
dest-vlan	Modified vid
no	Removes the settings.

Defaults The policy list is null by default.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example specifies the vid of the input messages whose vids in the tag ranges from 3 to 7 as 4 and forwards it.

```
Ruijie# configure terminal
Ruijie(config)# vlan range 3-8
Ruijie(config-vlan-range)# exit
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# vlan-mapping-in vlan 3-7 remark 8
Ruijie(config-if)# end
```

Related Commands

Command	Description
show interface [*intf-id*] vlan-mapping	N/A

Platform Description N/A

14.30 vlan-mapping-out vlan src-vlan remark dest-vlan

Use this command to configure the policy list of the one-to-one VLAN mapping in the outgoing direction on the acess, trunk, hybrid, uplink port. Use the **no** or **default** form of this command to restore the default setting.

vlan-mapping-out vlan *src-vlan* **remark** *dest-vlan*

no vlan-mapping-out vlan *src-vlan* **remark** *dest-vlan*

default vlan-mapping-out vlan *src-vlan* **remark** *dest-vlan*

Parameter Description

Parameter	Description
src-vlan	Vid of the input packets
dest-vlan	The modified vid
no	Removes the settings.

Defaults The policy list is null by default.

Command Interface configuration mode.

Mode

Usage Guide N/A

Configuration Examples The following example specifies the vid of the incoming messages whose vid in the tag is 3 as 4 and forwards it.

```
Ruijie# configure terminal
Ruijie(config)# vlan range 3-4
Ruijie(config-vlan-range)# exit
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# vlan-mapping-out vlan 3 remark 4
Ruijie(config-if)# end
```

Related Commands

Command	Description
show interface [*intf-id*] vlan-mapping	N/A

Platform Description N/A

15 HASH Simulator Commands

15.1 show aggregate load-balance interface *interface-type interface-number* to interface aggreateport *ap-id* forward [L2|L3] mac *

Use this command to display the result of calculating layer-2 packets on the AP in load-balancing mode using the hash simulator.

show aggregate load-balance interface *interface-type interface-number* **to interface aggregateport** *ap-id* forward **[L2|L3] mac** [**src-mac** *source-mac*] [**dst-mac** *dest-mac*]

Parameter Description

Parameter	Description
interface *interface-type interface-number*	Specifies the traffic ingress, where *interface-type* indicates the interface type and *interface-number* indicates the interface ID.
interface aggregateport *ap-id*	Specifies an AP group for packet forwarding. *ap-id* indicates the AP group ID.
forward [L2 | L3]	Indicates the layer-2 forwarding or layer-3 forwarding mode.
src-mac *source-mac*	Specifies the source MAC address.
dst-mac *dest-mac*	Specifies the destination MAC Address.
vlan vlan-id	Specifies the carried tag ID.
etype value	Specifies the Ethernet type of packets.

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14 (privileged user level)

Usage Guide This command is used to display the selected forwarding member port when layer-2 packets are forwarded to a specified AP. This command does not affect other services including AP services, nor affect the packet flow on the forwarding plane.

Configuration Example The following example displays the selected forwarding member port for packets with the destination MAC address of 0000.2000.0002 when such packets are forwarded to AG1 through the ingress GigabitEthernet 1/0/2.

```
Ruijie# show aggregate load-balance interface gigabitethernet 1/0/2 to interface
aggregateport 1 forward L2 mac dst-mac 0000.2000.0002
aggregateport load-balance mode :   Destination MAC
balance to port       :   GigabitEthernet 1/0/1
```

Field description:

Field	Description
aggregateport load-balance mode	Current load balancing mode
balance to port	Forwarding egress in load balancing mode, which

	is a specific physical port

Prompt

1. If the current AP has no up member port, no specific forwarding member port is displayed when this command is executed.

```
Ruijie# show aggregate load-balance interface gigabitethernet 1/0/2 to interface
aggregateport 1 forward L2 mac dst-mac 0000.2000.0002
aggregateport load-balance mode :    Destination MAC
balance to port        :
```

2. When the current product does not support the AP calculation using the hash simulator, a prompt is displayed, indicating that the product is not supported.

```
Ruijie# show aggregate load-balance interface gigabitethernet 1/0/2 to interface
aggregateport 1 forward L2 mac dst-mac 0000.2000.0002
this hash simulator does not support this product yet
```

3. When AP calculation using the hash simulator does not support the configured load balancing mode, a prompt is displayed, indicating that the current load balancing mode is not supported.

```
Ruijie# show aggregate load-balance interface gigabitethernet 1/0/2 to interface
aggregateport 1 forward L2 mac dst-mac 0000.2000.0002
this hash simulator does not support current balance mode
```

Platform Description N/A

15.2 show aggregate load-balance interface *interface-type interface-number* to interface aggreateport *ap-id* forward [L2|L3] ip *

Use this command to display the result of calculating IPv4 packets on the AP in load-balancing mode using the hash simulator.

show aggregate load-balance interface *interface-type interface-number* **to interface aggregateport** *ap-id* **forward** [L2 | L3] **ip** [**source** *source-ip*] [**destination** *dest-ip*] [**ip-protocol** *protocol-id*] [**l4-source-port** *src-port*] [**l4-dest-port** *dest-port*]

Parameter Description

Parameter	Description
interface *interface-type interface-number*	Specifies the traffic ingress, where *interface-type* indicates the interface type and *interface-number* indicates the interface ID.
interface aggregateport *ap-id*	Specifies an AP group for packet forwarding. *ap-id* indicates the AP group ID.
forward [L2 | L3]	Indicates the layer-2 forwarding or layer-3 forwarding mode.
source *source-ip*	Specifies the source IPv4 address. Default address: 0.0.0.0.
destination *dest-ip*]	Specifies the destination IPv4 Address. Default address: 0.0.0.0.
ip-protocol *protocol-id*	Specifies the IPv4 packet protocol number. Default value: 0.
l4-source-port *src-port*	Specifies the layer-4 source port number. Default value: 0.
l4-dest-port *dest-port*	Specifies the layer-4 destination port number. Default value: 0.

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14 (privileged user level)

Usage Guide This command is used to display the selected forwarding member port when IPv4 packets are forwarded to a specified AP. This command does not affect other services including AP services, nor affect the packet flow on the forwarding plane.

Configuration Example The following example displays the selected forwarding member port for IPv4 packets with the SIP as 1.1.1.1 when such packets are forwarded to AG1 through the ingress GigabitEthernet 1/0/2.

```
Ruijie# show aggregate load-balance interface gigabitethernet 1/0/2 to interface
aggregateport 1 forward L3 ip source 1.1.1.1
aggregateport load-balance mode :   Source IP
balance to port       :   GigabitEthernet 1/0/1
```

Field description:

Field	Description
aggregateport load-balance mode	Current load balancing mode
balance to port	Forwarding egress in load balancing mode, which is a specific physical port

Prompt 1. If the current AP has no up member port, no specific forwarding member port is displayed when this command is executed.

```
Ruijie# show aggregate load-balance interface gigabitethernet 1/0/2 to interface
aggregateport 1 forward L3 ip source 1.1.1.1
aggregateport load-balance mode :   Source IP
balance to port
```

2. When the current product does not support the AP calculation using the hash simulator, a prompt is displayed, indicating that the product is not supported.

```
Ruijie# show aggregate load-balance interface gigabitethernet 1/0/2 to interface
aggregateport 1 forward L3 ip source 1.1.1.1
this hash simulator does not support this product yet
```

3. When AP calculation using the hash simulator does not support the configured load balancing mode, a prompt is displayed, indicating that the current load balancing mode is not supported.

```
Ruijie# show aggregate load-balance interface gigabitethernet 1/0/2 to interface
aggregateport 1 forward L3 ip source 1.1.1.1
this hash simulater does not support current balance mode
```

Platform Description N/A

15.3 show aggregate load-balance interface *interface-type interface-number* to interface aggreateport *ap-id* forward [L2|L3] ipv6 *

Use this command to display IPv6 AP load-balanced forwarding port.

show aggregate load-balance interface *interface-type interface-number* **to interface aggregateport** *ap-id* **forward** [L2 | L3] **ipv6** [**source** *source-ip*] [**destination** *dest-ip*] [**ip-protocol** *protocol-id*]

[**l4-source-port** *src-port*] [**l4-dest-port** *dest-port*]

Parameter Description

Parameter	Description
interface *interface-type interface-number*	Specifies the traffic ingress, where *interface-type* indicates the interface type and *interface-number* indicates the interface ID.
interface aggregateport *ap-id*	Specifies an AP group for packet forwarding. *ap-id* indicates the AP group ID.
forward [L2 | L3]	Indicates the layer-2 forwarding or layer-3 forwarding mode.
source *source-ip*	Source IPv6 address. The default is 0000::0000.
destination *dest-ip*]	Destination IPv6 address. The default is 0000::0000.
ip-protocol *protocol-id*	IPv6 Protocol ID. For example, the protocol ID of UDP and TCP are 17 and 6 respectively. The default is 0.
l4-source-port *src-port*	L4 source port ID. The default is 0.
l4-dest-port *dest-port*	L4 destination port ID. The default is 0.

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Default Level 14

Usage Guide This command is used to display IPv6 AP load-balanced forwarding port. This command does not affect other services, including AP service and packet flow at the forwarding plane.

Configuration Example The following example displays the selected forwarding member port for IPv6 packets with the SIP as 1.1.1.1 when such packets are forwarded to AG1 through the ingress GigabitEthernet 1/0/2.

```
Ruijie# show aggregate load-balance interface gigabitethernet 1/0/2 to interface
aggregateport 1 forward L3 ipv6 source 2001::0001
aggregateport load-balance mode :   Source IP
balance to port       :   GigabitEthernet 1/0/1
```

Field	Description
aggregateport load-balance mode	Configured load balance mode
balance to port	Forwarding port (physical port)

Prompt

1. If the current AP has no up member port, no specific forwarding member port is displayed when this command is executed.

```
Ruijie# show aggregate load-balance interface gigabitethernet 1/0/2 to interface
aggregateport 1 forward L3 ipv6 source 2001::0001
aggregateport load-balance mode :   Source IP
balance to port       :
```

2. When the current product does not support the AP calculation using the hash simulator, a prompt is displayed, indicating that the product is not supported.

```
Ruijie# show aggregate load-balance interface gigabitethernet 1/0/2 to interface
```

```
aggregateport 1 forward L3 ipv6 source 2001::0001
this hash simulator does not support this product yet
```

3. When AP calculation using the hash simulator does not support the configured load balancing mode, a prompt is displayed, indicating that the current load balancing mode is not supported.

```
Ruijie# show aggregate load-balance interface gigabitethernet 1/0/2 to interface
aggregateport 1 forward L3 ipv6 source 2001::0001
this hash simulater does not support current balance mode
```

15.4 show ip ecmp-nexthop *

Use this command to display IPv4 ECMP load-balanced forwarding port.

show ip ecmp-nexthop address destination *dest-ip* [**source** *source-ip*] [**protocol** *protocol-id*] [**l4-source-port** *src-port*] [**l4-dest-port** *dst-port*] [**vrf** *vrf-name*] [**interface** *interface-type interface-number*]

Parameter Description

Parameter	Description
destination *dest-ip*	Destination IPv4 address
source *source-ip*	Source IPv4 address. The default is 0.0.0.0.
protocol *protocol-id*	IPv4 protocol ID. For example, the protocol ID of UDP and TCP are 17 and 6 respectively. The default is 0.
l4-source-port *src-port*	L4 source port ID. The default is 0.
l4-dest-port *dst-port*	L4 destination port ID. The default is 0.
vrf *vrf-name*	VRF instance
interface *interface-type interface-number*	Interface type and interface number

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Default Level 14

Usage Guide This command is used to display IPv4 ECMP load-balanced next hop.

Configuration Example The following example displays IPv4 ECMP load-balanced next hop.

```
Ruijie#show ip ecmp-nexthop address destination 2.3.4.5
balance mode:   Destination IP
route table:    vrf 0
hit ip route, actual nexthop marked by "*":
2.0.0.0/8
  via 1.0.0.10 weight 1 *
  via 1.0.0.11 weight 1
  via 1.0.0.12 weight 1
  via 1.0.0.13 weight 1
```

Field Description

Field	Description
balance mode	Configured load-balancing mode
route table	Hit VRF instance
hit ip route, actual nexthop marked by "*":	Hit IPv4 route. The actual next hop is marked by "*".

15.5 show ipv6 ecmp-nexthop *

Use this command to display IPv6 ECMP load-balanced forwarding port.

show ipv6 ecmp-nexthop address destination *dest-ip* [**source** *source-ip*] [**next-header** *protocol-id*] [**l4-source-port** *src-port*] [**l4-dest-port** *dst-port*] [**vrf** *vrf-name*] [**interface** *interface-type interface-number*]

Parameter Description

Parameter	Description
destination *dest-ip*	(Mandatory) Destination IPv6 address
source *source-ip*	Source IPv6 address. The default is 0000::0000.
protocol *protocol-id*	IPv6 Protocol ID. For example, the protocol ID of UDP and TCP are 17 and 6 respectively. The default is 0.
l4-source-port *src-port*	L4 source port ID. The default is 0.
l4-dest-port *dst-port*	L4 destination port ID. The default is 0.
vrf *vrf-name*	VRF instance
interface *interface-type interface-number*	Interface type and interface number

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Default Level 14

Usage Guide This command is used to display IPv6 ECMP load-balanced next hop.

Configuration Example The following example displays IPv6 ECMP load-balanced next hop.

```
Ruijie#show ipv6 ecmp-nexthop address destination 2::5
balance mode:   Destination IP
route table:    vrf 0
hit ip route, actual nexthop marked by "*":
2::/64
  via 1::10 weight 1
  via 1::11 weight 1 *
  via 1::12 weight 1
  via 1::13 weight 1
```

Field Description

Field	Description
balance mode	Configured load-balancing mode
route table	Hit VRF instance
hit ip route, actual nexthop marked by "*":	Hit IPv6 route. The actual next hop is marked by "*".

16 L3-PKT-COUNTER ENABLE Commands

16.1 l3-pkt-counter enable

Use this command to enable the IP traffic statistics on the Layer-3 interface.

l3-pkt-counter enable

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Global configuration mode

Default Level 14

Usage Guide N/A

Configuration Example The following example enables the IP traffic statistics function on a Layer-3 interface.

```
Ruijie(config)#l3-pkt-counter enable
```

Platform Description N/A

17 Positioning Lamp Commands

17.1 posit-lamp enable

Use this command to enable the positioning lamp function on a port. Use the **no** form of this command to disable the positioning lamp function.

posit-lamp enable

no posit-lamp enable

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Interface configuration mode

Default Level 14

Usage Guide Enable the positioning lamp function on a port so that the physical LED indicator of the port is solid red.

Configuration Example The following example configures the LED indicator mode.

```
Ruijie#configure
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#int TenGigabitEthernet 0/1
Ruijie(config-if-TenGigabitEthernet 0/1)#posit-lamp enable
Ruijie(config-if-TenGigabitEthernet 0/1)#exit
Ruijie(config)#
```

Platform Description This command is supported on:

1. S6500 series product running on RGOS11.0(5)B9P23;
2. S6510-48VS8CQ V2.0 and S6250-48XS8CQ products.

IP Address & Application Commands

1. IP Address/Service Commands
2. ARP Commands
3. IPv6 Commands
4. DHCP Commands
5. DHCPv6 Commands
6. DNS Commands
7. FTP Server Commands
8. FTP Client Commands
9. Tunnel Commands
10. Network Connectivity Test Tool Commands
11. TCP Commands
12. IPv4/IPv6 REF Commands
13. ECMP CLUSTER Commands

1 IP Address/Service Commands

1.1 gateway

Use this command to set the gateway address for the management port. Use the **no** form of this command to remove the setting.

gateway *address*

no gateway

Parameter Description

Parameter	Description
address	Sets the gateway address for the management port

Defaults N/A

Command Mode Interface configuration mode

Usage Guide N/A

Configuration Examples The following example sets the gateway address for the management port to 1.1.1.1.

```
Ruijie(config)# interface mgmt 0
Ruijie(config-if-Mgmt 0)# gateway 1.1.1.1
Ruijie(config-if-Mgmt 0)#
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.2 ip-address

Use this command to configure the IP address of an interface. Use the **no** form of this command to restore the default setting.

ip address *ip-address network-mask* { [**secondary**] | [**dual-active backup**] }

no ip address [*ip-address network-mask* { [**secondary**] | [**dual-active backup**] }

Parameter Description

Parameter	Description
ip-address	32-bit IP address, with 8 bits in one group in decimal format. Groups are separated by dots.

network-mask	32-bit network mask. 1 stands for the mask bit, 0 stands for the host bit, with 8 bits in one group in decimal format. Groups are separated by dots.
secondary	Secondary IP address
dual-active backup	Configures the IP addresses for standby device of a VSU, which is only supportd on the MGMT interface.

Defaults No IP address is configured for the interface by default.

Command Mode Interface configuration mode.

Usage Guide The equipment cannot receive and send IP packets before it is configured with an IP address. After an IP address is configured for the interface, the interface is allowed to run the Internet Protocol (IP).

The network mask is also a 32-bit value that identifies which bits among the IP address is the network portion. Among the network mask, the IP address bits that correspond to value “1” are the network address. The IP address bits that correspond to value “0” are the host address. For example, the network mask of Class A IP address is “255.0.0.0”. You can divide a network into different subnets using the network mask. Subnet division means to use the bits in the host address part as the network address part, so as to reduce the capacity of a host and increase the number of networks. In this case, the network mask is called subnet mask.

The RGOS software supports multiple IP address for an interface, in which one is the primary IP address and others are the secondary/slave IP addresses. Theoretically, there is no limit for the number of secondary IP addresses. The primary IP address must be configured before the secondary IP addresses. The secondary IP address and the primary IP address must belong to the same network or different networks. Secondary IP addresses are often used in network construction. Typically, you can try to use secondary IP addresses in the following situations:

A network hasn’t enough host addresses. At present, the LAN should be a class C network where 254 hosts can be configured. However, when there are more than 254 hosts in the LAN, another class C network address is necessary since one class C network is not enough. Therefore, the device should be connected to two networks and multiple IP addresses should be configured.

Many older networks are layer 2-based bridge networks that have not been divided into different subnets. Use of secondary IP addresses will make it very easy to upgrade this network to an IP layer-based routing network. The equipment configures an IP address for each subnet.

Two subnets of a network are separated by another network. You can create a subnet for the separated network, and connect the separated subnet by configuring a secondary IP address. One subnet cannot appear on two or more interfaces of a device.

The **dual-active backup** command is used on the management port of the VSU device to configure the standby IP address. Generally, only the active IP address is applied. If the VSU works in dual-active mode, the standby IP address will be applied to the standby device as the management IP address.

It is recommended to use the **dual-active backup** command with the **mgmt_mode unique** command. The standby IP address will not take effect until the VSU works in dual-active mode. If a device contains more than one management ports. it is recommended to configure each management port with an IP address instead of running only the **dual-active backup** command.

Configuration Examples

The following example configures the primary IP address and the network mask as 10.10.10.1 and 255.255.255.0 respectively .

```
Ruijie(config-if)# ip address 10.10.10.1 255.255.255.0
```

The following example configures active and standby IP addresses.

```
Ruijie(config)#interface mgmt 0
Ruijie(config-if-Mgmt 0)# ip address 172.28.48.57 24 dual-active backup
```

Related Commands

Command	Description
show interface	Displays detailed information of the interface.

Platform Description

N/A

1.3 ip broadcast-addresss

Use this command to define a broadcast address for an interface in the interface configuration mode. Use the **no** form of this command to restore the default setting.

ip broadcast-addresss *ip-address*

no ip broadcast-addresss

Parameter Description

Parameter	Description
ip-address	Broadcast address of IP network

Defaults

The default IP broadcast address is 255.255.255.255.

Command Mode

Interface configuration mode.

Usage Guide

At present, the destination address of IP broadcast packet is all “1”, represented as 255.255.255.255. The RGOS software can generate broadcast packets with other IP addresses through definition, and can receive both all “1” and the broadcast packets defined by itself.

Configuration Examples The following example sets he destination address of IP broadcast packets generated by this interface to 0.0.0.0.

```
Ruijie(config-if)# ip broadcast-address 0.0.0.0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.4 ip icmp error-interval

Use this command to set the rate to send the ICMP destination unreachable packets triggered by DF in the IP header. Use the **no** form of this command to restore the default setting.

ip icmp error-interval DF milliseconds [*bucket-size*]

no ip icmp error-interval DF *milliseconds* [*bucket-size*]

Use this command to set the rate to send other ICMP error packets. Use the **no** form of this command to restore the default setting.

ip icmp error-interval milliseconds [bucket-size]

no ip icmp error-interval *milliseconds* [*bucket-siz*]

Parameter Description

Parameter	Description
milliseconds	The refresh period of the token bucket, in the range from 0 to 2147483647 in the unit of milliseconds. 0 indicates no limit on the rate to send ICMP error packets. The default is 100.
bucket-size	The number of tokens in the bucket, in the range is from 1 to 200. The default is 10.

Defaults The default rate is 10 packets per 100 millisecond.

Command Mode Global configuration mode.

Usage Guide To prevent DoS attack, the token bucket algorithm is adopted to limit the rate to send ICMP error packets.

If IP packets need to be fragmented while the DF is set to 1, the device sends ICMP destination unreachable packets numbered 4 to the source IP address for path MTU discovery. Rate limits on ICMP destination unreachable packets and other error packets are needed to prevent path MTU discovery failure.

It is recommended to set the refresh period to an integral multiple of 10 milliseconds. If the refresh period is not an integral multiple of 10 milliseconds, it is adjusted automatically. For example, 1 per 5 milliseconds is adjusted to 2 per 10 milliseconds; 3 per 15 milliseconds is adjusted to 2 per 10 milliseconds.

Configuration Examples

The following example sets the rate to send the ICMP destination unreachable packets triggered by DF in the IP header to 100 per second.

```
Ruijie(config)# ip icmp error-interval DF 1000 100
```

The following example sets the rate to send other ICMP error packets to 10 per second.

```
Ruijie(config)# ip icmp error-interval 1000 10
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

1.5 ip directed-broadcast

Use this command to enable the conversion from IP directed broadcast to physical broadcast in the interface configuration mode. Use the **no** form of this command to restore the default setting.

ip directed-broadcast [*access-list-number*]

no ip directed-broadcast

Parameter Description

Parameter	Description
access-list-number	(Optional) Access list number, in the range from 1 to 199 and from 1300 to 2699. After an access list number has been defined, only the IP directed broadcast packets that match this access list are converted.

Defaults

This function is disabled by default.

Command Mode

Interface configuration mode.

Usage Guide

IP directed broadcast packet is an IP packet whose destination address is an IP subnet broadcast address. For example, the packet with the destination address 172.16.16.255 is called a directed broadcast packet. However, the node that generates this packet is not a member of the destination subnet.

The device that is not directly connected to the destination subnet receives an IP directed broadcast packet and handles this packet in the same way as forwarding a unicast packet. After the directed broadcast packet reaches a device that is directly connected to this subnet, the device converts the directed broadcast packet into a flooding broadcast packet (typically the broadcast packet whose destination IP address is all “1”), and then sends the packet to all the hosts in the destination subnet in the manner of link layer broadcast.

You can enable conversion from directed broadcast into physical broadcast on a specified interface, so that this interface can forward a direct broadcast packet to a directly connected network. This command affects only the final transmission of directed broadcast packets that

have reached the destination subnet instead of normal forwarding of other directed broadcast packets.
You can also define an access list on an interface to control which directed broadcast packets to forward. After an access list is defined, only the packets that conform to the conditions defined in the access list undergo conversion from directed broadcast into physical broadcast.
If the **no ip directed-broadcast** command is configured on an interface, RGOS will discard the directed broadcast packets received from the directly connected network.

Configuration Examples The following example enables forwarding of directed broadcast packet on the fastEthernet 0/1 port of a device.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip directed-broadcast
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.6 ip icmp source

Use this command to configure the source address of ICMP packets. Use the **no** form of this command to restore the default setting.
ip icmp source [vrf *vrf-name* **]** *ip-address*
no ip icmp source

Parameter Description

Parameter	Description
vrf-name	Specifies the name of a configured VRF instance.
ip-address	Specifies the source address of ICMP packets.

Defaults By default, no source address is configured for ICMP packets.

Command Mode Global configuration mode

Usage Guide In a network with a large number of IP addresses configured, it is complex for receivers to recognize from which device ICMP packets are sent. To simplify the judgement, you can choose a specified address, like the address of the loopback interface, as the source address for ICMP packets.

Configuration Examples The following example sets 192.168.1.1 as the source address for ICMP packets.

```
Ruijie(config)# ip icmp souce 192.168.1.1
```

Related Commands

Command	Description

N/A	N/A

Platform Description N/A

1.7 ip icmp timestamp

Use this command to enbale the device to return a Timestamp Reply. Use the **no** form of this command to disable returning of Timestamp Reply.

ip icmp timestamp

no ip icmp timestamp

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example disables the device to return a Timestamp Reply.

```
Ruijie(config)# no ip icmp timestamp
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.8 ip mask-reply

Use this command to configure the RGOS software to respond the ICMP mask request and send an ICMP response message in the interface configuration mode. Use the **no** form of this command to restore the default setting.

ip mask-reply

no ip mask-reply

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command mode Interface configuration mode.

Usage Guide Sometimes, a network device needs the subnet mask of a subnet on the Internet. To obtain such information, the network device can send an ICMP mask request message, and the network device that receives this message will send a mask response message.

Configuration Examples The following example sets the FastEthernet 0/1 interface of a device to respond the ICMP mask request message.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip mask-reply
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.9 ip mtu

Use this command to set the Maximum Transmission Unit (MTU) for an IP packet in the interface configuration mode. Use the **no** form of this command is restore the default setting.
ip mtu *bytes*
no ip mtu

Parameter Description

Parameter	Description
bytes	Maximum transmission unit of IP packet , in the range from 68 to 1500 bytes

Defaults It is the same as the value configured in the interface command **mtu** by default.

Command Mode Interface configuration mode.

Usage Guide If an IP packet is larger than the IP MTU, the RGOS software will split this packet. All the devices in the same physical network segment must have the same IP MTU for the interconnected interface.
If the interface configuration command **mtu** is used to set the maximum transmission unit value of the interface, IP MTU will automatically match with the MTU value of the interface. However, if the IP MTU value is changed, the MTU value of the interface will remain unchanged.

Configuration Examples The following iexample sets the IP MTU value of the fastEthernet 0/1 interface to 512 bytes.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip mtu 512
```

Related Commands	Command	Description
	mtu	Sets the MTU value of an interface.

Platform Description N/A

1.10 ip redirects

Use this command to allow the RGOS software to send an ICMP redirection message in the interface configuration mode. Use the **no** form of this command to disable this function.

ip redirects

no ip redirects

Parameter Description	Parameter	Description
	N/A	N/A

Defaults This function is enabled by default.

Command Mode Interface configuration mode.

Usage Guide When the route is not optimum, it may make the device to receive packets through one interface and send it though the same interface. If the device sends the packet through the interface through which this packet is received, the device will send an ICMP redirection message to the data source, telling the data source that the gateway for the destination address is another device in the subnet. In this way the data source will send subsequent packets along the optimum path.

Configuration Examples The following example disables ICMP redirection for the fastEthernet 0/1 interface.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# no ip redirects
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

1.11 ip redirect-drop

Use this command to enable protection of routed ports. Use the **no** form of this command to disable this function.

ip redirect-drop

no ip redirect-drop

Parameter Description	Parameter	Description
	N/A	N/A

Defaults This function is disabled by default.

Command Mode Interface configuration mode.

Usage Guide This command is used to forbid packets to come in and go out via the same routed port.

Configuration Examples The following example requries packets coming in via the fastEthernet 0/1 interface to go out via other routed ports .

```
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# ip redirect-drop
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

1.12 ip source-route

Use this command to allow the RGOS software to process an IP packet with source route information in global configuration mode. Use the **no** form of this command to disable this function.

ip source-route

no ip source-route

Parameter Description	Parameter	Description
	N/A	N/A

Defaults This function is enabled by default.

Command Mode Global configuration mode.

Usage Guide RGOS supports IP source route. When the device receives an IP packet, it will check the options of the IP packet, such as strict source route, loose source route and record route. Details about these options can be found in RFC 791. If an option is found to be enabled in this packet, a response will be made. If an invalid option is detected, an ICMP parameter problem message will be sent to the data source, and then this packet is discarded.

Configuration Examples The following example disables the IP source route.

```
Ruijie(config)# no ip source-route
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

1.13 ip ttl

Use this command to set the TTL value of the unicast packet. Use the **no** form of this command to restore the default setting.

ip ttl *value*

no ip ttl

Parameter Description	Parameter	Description
	value	Sets the TTL value of the unicast packet, in the range from 0 to 255.

Defaults The default is 64.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example sets the TTL value of the unicast packet to 100.

```
Ruijie(config)# ip ttl 100
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

1.14 ip ttl-expires enable

This command is used to enable notifications of expired TTL. Use the **no** form of this command to disable this function.

ip ttl-expires enable

no ttl-expires enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, notifications are enabled to indicate expired TTL.

Command mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example disables notifications indicating expired TTL.

```
Ruijie(config)# no ttl-expires enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.15 ip unnumbered

This command is used to configure unnumbered interfaces. After an interface is set to an unnumbered interface, IP can be run on the interface and packets can be sent or received on the interface. Use the **no** form of this command to restore the default setting.

ip unnumbered *interface-type interface-number*

no ip unnumbered

Parameter Description

Parameter	Description
interface-type	Type of the associated interface
interface-number	No. of the associated interface

Defaults No unnumbered interface is configured by default.

Command mode Interface configuration mode

Usage Guide An unnumbered interface indicates that IP is enabled on the interface but no IP address is allocated for the interface. An unnumbered interface must associate with an interface with an IP address. The source IP address of the IP packets generated on an unnumbered interface is the IP address of the associated interface. In addition, the routing protocol process determines whether to send route update packets to the unnumbered interface according to the IP address of the associated interface. Pay attention to the following when using an unnumbered interface:

An Ethernet interface cannot be set to an unnumbered interface.

When SLIP, HDLC, PPP, LAPB, and Frame-relay are encapsulated on a serial port, the port can be set to an unnumbered interface. When a frame relay is encapsulated, only a point-to-point subinterface can be set to an unnumbered interface. In the case of X.25 encapsulation, unnumbered interface is not allowed.

The **ping** command cannot be used to check whether an unnumbered interface is working properly because the interface does not have an IP address. The status of an unnumbered interface can be remotely monitored over SNMP.

The network cannot be enabled using an unnumbered interface.

Configuration Examples to the following example configures the local interface as an unnumbered interface and sets the associated interfacet to FastEthernet 0/1 (an IP address is configured for the interface).

```
Ruijie(config-if)# ip unnumbered fastEthernet 0/1
```

Related Commands

Command	Description
show interface	Displays the detailed information about the interface.

Platform Description N/A

1.16 ip unreachables

Use this command to allow the RGOS software to generate ICMP destination unreachable messages. Use the **no** form of this command to disable this function.

ip unreachables

no ip unreachables

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode Interface configuration mode.

Usage Guide RGOS software will send a ICMP destination unreachable message if it receives unicast message with self-destination-address and can not process the upper protocol of this message.

RGOS software will send ICMP host unreachable message to source data if it can not forward a

message due to no routing.

This command influences all ICMP destination unreachable messages.

Configuration Examples The following example disables sending ICMP destination unreachable message on FastEthernet 0/1.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# no ip unreachables
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.17 show ip interface

Use this command to display the IP status information of an interface.

show ip interface [*interface-type interface-number* | **brief**]

Parameter Description

Parameter	Description
interface-type	Specifies interface type.
interface-number	Specifies interface number.
brief	Displays the brief configurations about the IP of the layer-3 interface (including the interface primary ip, secondary ip and interface status)

Defaults N/A.

Command Mode Privileged EXEC mode.

Usage Guide When an interface is available, RGOS will create a direct route in the routing table. The interface is available in that the RGOS software can receive and send packets through this interface. If the interface changes from available status to unavailable status, the RGOS software removes the appropriate direct route from the routing table.

If the interface is unavailable, for example, two-way communication is allowed, the line protocol status will be shown as “UP”. If only the physical line is available, the interface status will be shown as “UP”.

The results shown may vary with the interface type, because some contents are the interface-specific options

Configuration Examples The following exmaple displays the output of the **show ip interface brirf command**.

```
Ruijie#show ip interface brief
Interface IP-Address(Pri) IP-Address(Sec) Status Protocol
```

```
GigabitEthernet 0/10 2.2.2.2/24 3.3.3.3/24 down down
GigabitEthernet 0/11 no address no address down down
VLAN 1 1.1.1.1/24 no address down down
```

Description of fields:

Field	Description
Status	Link status of an interface. The value can be **up**, **down**, or **administratively down**.
Protocol	IPv4 protocol status of an interface.

The following example displays the output of the **show ip interface vlan** command.

```
SwitchA#show ip interface vlan 1
VLAN 1
 IP interface state is: DOWN
 IP interface type is: BROADCAST
 IP interface MTU is: 1500
 IP address is:
 1.1.1.1/24 (primary)
 IP address negotiate is: OFF
 Forward direct-broadcast is: OFF
 ICMP mask reply is: ON
 Send ICMP redirect is: ON
 Send ICMP unreachabled is: ON
 DHCP relay is: OFF
 Fast switch is: ON
 Help address is:
 Proxy ARP is: OFF
ARP packet input number: 0
 Request packet:  0
 Reply packet:  0
 Unknown packet: 0
TTL invalid packet number: 0
ICMP packet input number: 0
 Echo request:  0
Echo reply:  0
 Unreachable:  0
 Source quench:  0
 Routing redirect:  0
```

Description of fields in the results:

Field	Description
IP interface state is:	The network interface is available, and both its interface hardware status and line protocol status are “UP”.
IP interface type is:	Show the interface type, such as broadcast, point-to-point, etc.

IP interface MTU is:	Show the MTU value of the interface.
IP address is:	Show the IP address and mask of the interface.
IP address negotiate is:	Show whether the IP address is obtained through negotiation.
Forward direct-broadcast is:	Show whether the directed broadcast is forwarded.
ICMP mask reply is:	Show whether an ICMP mask response message is sent.
Send ICMP redirect is:	Show whether an ICMP redirection message is sent.
Send ICMP unreachabled is:	Show whether an ICMP unreachable message is sent.
DHCP relay is:	Show whether the DHCP relay is enabled.
Fast switch is:	Show whether the IP fash switching function is enabled.
Route horizontal-split is:	Show whether horizontal split is enabled, which will affect the route update behavior of the distance vector protocol.
Help address is:	Show the helper IP address.
Proxy ARP is:	Show whether the agent ARP is enabled.
ARP packet input number: Request packet: Reply packet: Unknown packet:	Show the total number of ARP packets received on the interface, including: ARP request packet ARP reply packet Unknown packet
TTL invalid packet number:	Show the TTL invalid packet number
ICMP packet input number: Echo request: Echo reply: Unreachable: Source quench: Routing redirect:	Show the total number of ICMP packets received on the interface, including: Echo request packet Echo reply packet Unreachable packet Source quench packet Routing redirection packet
Outgoing access list is	Show whether an outgoing access list has been configured for an interface.
Inbound access list is	Show whether an incoming access list has been configured for an interface.

Related Commands	**Command**	**Description**
	N/A.	N/A.

Platform Description N/A.

1.18 show ip interface-statistics

Use this command to display the statistics of IP pakcets on an interface.

show ip interface-statistics [*interface-name*] { **ipv4 | ipv6** }

Parameter Description

Parameter	Description
ipv4	Displays IPv4 packets.
ipv6	Displays IPv6 packets.
interface-name	Specifies the interface name.

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the statistics of IP packets on the interface, VLAN 1.

```
Ruijie# show ip interface-statistics vlan 1 ipv4
Description
  The interfce traffic statistics of IPv4 or IPv6 packets.
  And the per-interface statistics contains the objects of
  ipIfStatsTable defined in RFC4293.
Interface: VLAN 1
IP version: IPv4
  ipIfStatsInReceives: 0
  ipIfStatsHCInReceives: 0
  ipIfStatsInOctets: 0
  ipIfStatsHCInOctets: 0
  ipIfStatsInHdrErrors: 0
  ipIfStatsInBadSum: 0
  ipIfStatsInNoRoutes: 0
  ipIfStatsInAddrErrors: 0
  ipIfStatsInUnknownProtos: 0
  ipIfStatsInTruncatedPkts: 0
  ipIfStatsInForwDatagrams: 0
  ipIfStatsHCInForwDatagrams: 0
  ipIfStatsReasmReqds: 0
  ipIfStatsReasmOKs: 0
  ipIfStatsReasmFails: 0
  ipIfStatsInDiscards: 0
  ipIfStatsInDelivers: 0
  ipIfStatsHCInDelivers: 0
  ipIfStatsOutRequests: 0
  ipIfStatsHCOutRequests: 0
  ipIfStatsOutForwDatagrams: 0
```

```
  ipIfStatsHCOutForwDatagrams: 0
  ipIfStatsOutDiscards: 0
  ipIfStatsOutFragReqds: 0
  ipIfStatsOutFragOKs: 0
  ipIfStatsOutFragFails: 0
  ipIfStatsOutFragCreates: 0
  ipIfStatsOutTransmits: 0
  ipIfStatsHCOutTransmits: 0
  ipIfStatsOutOctets: 0
  ipIfStatsHCOutOctets: 0
  ipIfStatsInMcastPkts: 0
  ipIfStatsHCInMcastPkts: 0
  ipIfStatsInMcastOctets: 0
  ipIfStatsHCInMcastOctets: 0
  ipIfStatsOutMcastPkts: 0
  ipIfStatsHCOutMcastPkts: 0
  ipIfStatsOutMcastOctets: 0
  ipIfStatsHCOutMcastOctets: 0
  ipIfStatsInBcastPkts: 0
  ipIfStatsHCInBcastPkts: 0
  ipIfStatsOutBcastPkts: 0
  ipIfStatsHCOutBcastPkts: 0
  ipIfStatsDiscontinuityTime: 0
ipIfStatsRefreshRate: 0

Ruijie# show ip interface-statistics vlan 1 ipv6
Description
  The interfce traffic statistics of IPv4 or IPv6 packets.
  And the per-interface statistics contains the objects of
  ipIfStatsTable defined in RFC4293.
Interface: VLAN 1
IP version: IPv6
  ipIfStatsInReceives: 0
  ipIfStatsHCInReceives: 0
  ipIfStatsInOctets: 0
  ipIfStatsHCInOctets: 0
  ipIfStatsInHdrErrors: 0
  ipIfStatsInBadSum: 0
  ipIfStatsInNoRoutes: 0
  ipIfStatsInAddrErrors: 0
  ipIfStatsInUnknownProtos: 0
  ipIfStatsInTruncatedPkts: 0
  ipIfStatsInForwDatagrams: 0
  ipIfStatsHCInForwDatagrams: 0
```

```
ipIfStatsReasmReqds: 0
ipIfStatsReasmOKs: 0
ipIfStatsReasmFails: 0
ipIfStatsInDiscards: 0
ipIfStatsInDelivers: 0
ipIfStatsHCInDelivers: 0
ipIfStatsOutRequests: 0
ipIfStatsHCOutRequests: 0
ipIfStatsOutForwDatagrams: 0
ipIfStatsHCOutForwDatagrams: 0
ipIfStatsOutDiscards: 0
ipIfStatsOutFragReqds: 0
ipIfStatsOutFragOKs: 0
ipIfStatsOutFragFails: 0
ipIfStatsOutFragCreates: 0
ipIfStatsOutTransmits: 0
ipIfStatsHCOutTransmits: 0
ipIfStatsOutOctets: 0
ipIfStatsHCOutOctets: 0
ipIfStatsInMcastPkts: 0
ipIfStatsHCInMcastPkts: 0
ipIfStatsInMcastOctets: 0
ipIfStatsHCInMcastOctets: 0
ipIfStatsOutMcastPkts: 0
ipIfStatsHCOutMcastPkts: 0
ipIfStatsOutMcastOctets: 0
ipIfStatsHCOutMcastOctets: 0
ipIfStatsInBcastPkts: 0
ipIfStatsHCInBcastPkts: 0
ipIfStatsOutBcastPkts: 0
ipIfStatsHCOutBcastPkts: 0
ipIfStatsDiscontinuityTime: 0
ipIfStatsRefreshRate: 0
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

1.19 show ip packet queue

Use this command to display the statistics of IP packet queues.

show ip packet queue

Parameter Description	Parameter	Description
	N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A.

Configuration Examples The following example displays the statistics of IP packet queues.

```
Ruijie#show ip packet queue
Receive 31925 packets(fragment=0):
  IP packet receive queue: length 0, max 1542, overflow 0.
  Receive 13 ICMP echo packets, 25 ICMP reply packets .
  Discards:
    Failed to alloc skb: 0.
    Receive queue overflow: 0.
    Unknow protocol drops: 0.
    ICMP rcv drops: 0. for skb check fail.
    ICMP rcv drops: 0. for skb is broadcast.
Sent packets:
  Success: 15644
  Generate 13 and send 8 ICMP reply packets, send 26 ICMP echo packets.
  It records 187 us as max time in ICMP reply process.
Failed to alloc efbuf: 0
  Dropped by EFMP: 0
  NoRoutes: 887
  Get vrf fails: 0
  Cannot assigned address drops: 0
  Failed to encapsulate ethernet head: 0
ICMP error queue: length 0, max 1542, overflow 0.
```

Field	Description
IP packet receive queue	Statistics of received packets
Discards	Statistics of discarded packets
Sent packets	Statistics of sent packets
ICMP error queue	Statistics of ICMP error packets

Related Commands	Command	Description
	N/A	N/A

Platform N/A

Description

1.20 show ip packet statistics

Use this command to display the statistics of IP packets.

show ip packet statistics [**total** | *interface-name*]

Parameter Description

Parameter	Description
interface-name	Interface name
total	Displays the total statistics of all interfaces.

Defaults N/A.

Command Mode Privileged EXEC mode.

Usage Guide N/A.

Configuration Examples The following example displays the output of this command.

```
Ruijie# show ip packet statistics
Total
 Received 1000 packets, 1000000 bytes
 Unicast:1000,Multicast:0,Broadcast:0
 Discards:0
 HdrErrors:0(BadChecksum:0,TTLExceeded:0,Others:0)
 NoRoutes:0
 Others:0
 Sent 100 packets, 6000 bytes
 Unicast:50,Multicast:50,Broadcast:0

VLAN 1
 Received 1000 packets, 1000000 bytes
 Unicast:1000,Multicast:0,Broadcast:0
 Discards:0
 HdrErrors:0(BadChecksum:0,TTLExceeded:0,Others:0)
 NoRoutes:0
 Others:0
 Sent 100 packets, 6000 bytes
 Unicast:50,Multicast:50,Broadcast:0
```

Related Commands

Command	Description
ip default-gateway	Configures the default gateway, which is only supported on the Layer 2 switch.

Platform N/A

Description

1.21 show ip raw-socket

Use this command to display IPv4 raw sockets.

show ip raw-socket [*num*]

Parameter Description	**Parameter**	**Description**
	num	Protocol.

Defaults N/A.

Command Mode Priviledged EXEC mode.

Usage Guide N/A.

Configuration Examples The following example displays all IPv4 raw sockets.

```
Ruijie# show ip raw-socket
Number Protocol Process name
1      ICMP     dhcp.elf
2      ICMP     vrrp.elf
3      IGMP     igmp.elf
4      VRRP     vrrp.elf
Total: 4
```

Field Description

Field	Description
Number	Number
Protocol	Protocol
Process name	Process name
Total	Total number

Related Commands	**Command**	**Description**
	N/A	N/A

Platform Description N/A

1.22 show ip sockets

Use this command to display all IPv4 sockets.

show ip sockets

Parameter Description	Parameter	Description
	N/A.	N/A.

Defaults N/A.

Command Mode Privileged EXEC mode.

Usage Guide N/A.

Configuration Examples The following displays all IPv4 sockets.

```
Ruijie# show ip sockets
Number Process name    Type    Protocol LocalIP:Port  ForeignIP:Port
State
1     dhcp.elf        RAW     ICMP    0.0.0.0:1    0.0.0.0:0
*
2     vrrp.elf        RAW     ICMP    0.0.0.0:1    0.0.0.0:0
*
3     igmp.elf        RAW     IGMP    0.0.0.0:2    0.0.0.0:0
*
4     vrrp.elf        RAW     VRRP    0.0.0.0:112   0.0.0.0:0
*
5     dhcpc.elf       DGRAM   UDP     0.0.0.0:68    0.0.0.0:0
*
6     rg-snmpd        DGRAM   UDP     0.0.0.0:161   0.0.0.0:0
*
7     wbav2          DGRAM   UDP     0.0.0.0:2000  0.0.0.0:0
*
8     vrrp_plus.elf   DGRAM   UDP     0.0.0.0:3333  0.0.0.0:0
*
9     mpls.elf        DGRAM   UDP     0.0.0.0:3503  0.0.0.0:0
*
10    rds_other_th    DGRAM   UDP     0.0.0.0:3799  0.0.0.0:0
*
11    rg-snmpd        DGRAM   UDP     0.0.0.0:14800 0.0.0.0:0
*
12    rg-sshd         STREAM  TCP     0.0.0.0:22    0.0.0.0:0
LISTEN
13    rg-telnetd      STREAM  TCP     0.0.0.0:23    0.0.0.0:0
LISTEN
14    wbard          STREAM  TCP     0.0.0.0:4389  0.0.0.0:0
LISTEN
15    wbard          STREAM  TCP     0.0.0.0:7165  0.0.0.0:0
LISTEN
```

```
Total: 15
```

Field Description

Field	Description
Number	Serial number.
Process name	Process name.
Type	Socket type, including the following types: RAW: raw sockets DGRAM: datagram type STREAM: stream type.
Protocol	Protocol.
LocalIP:Port	Local IP address and port.
ForeignIP:Port	Peer IP address and port.
State	State. This field is for only TCP sockets.
Total	The total number of sockets.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.23 show ip udp

Use this command to display IPv4 UDP sockets.

show ip udp [**local-port** *num*]

Use this command to display IPv4 UDP socket statistics.

show ip udp statistics

Parameter Description

Parameter	Description
local-port *num*	Local port number

Defaults N/A.

Command Mode Privileged EXEC mode.

Usage Guide N/A.

Configuration Examples The following example displays all IPv4 UDP sockets.

```
Ruijie# show ip udp
Number Local Address        Peer Address         Process name
1     0.0.0.0:68          0.0.0.0:0           dhcpc.elf
```

```
2      0.0.0.0:161          0.0.0.0:0           rg-snmpd
3      0.0.0.0:2000         0.0.0.0:0           wbav2
4      0.0.0.0:3333         0.0.0.0:0           vrrp_plus.elf
5      0.0.0.0:3503         0.0.0.0:0           mpls.elf
6      0.0.0.0:3799         0.0.0.0:0           rds_other_th
7      0.0.0.0:14800        0.0.0.0:0           rg-snmpd
```

Field Description

Field	Description
Number	Number.
Local Address	Local IP address and port.
Peer Address	Peer IP address and port.
Process name	Process name.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2 ARP Commands

2.1 arp

Use this command to add a permanent IP address and MAC address mapping to the ARP cache table. Use the **no** form of this command to restore the default setting.

arp *ip-address MAC-address type* [**alias**]

no arp *ip-address MAC-address type* [**alias**]

Parameter Description

Parameter	Description
ip-address	The IP address that corresponds to the MAC address. It includes four parts of numeric values in decimal format separated by dots.
MAC-address	48-bit data link layer address
type	ARP encapsulation type. The keyword is arpa for the Ethernet interface.
alias	(Optional) RGOS will respond to the ARP request from this IP address after this parameter is defined.

Defaults There is no static mapping record in the ARP cache table by default.

Command Mode Global configuration mode.

Usage Guide RGOS finds the 48-bit MAC address according to the 32-bit IP address using the ARP cache table. Since most hosts support dynamic ARP resolution, usually static ARP mapping is not necessary. The **clear arp-cache** command can be used to delete the ARP mapping that is learned dynamically.

Configuration Examples The following example sets an ARP static mapping record for a host in the Ethernet.

```
Ruijie(config)# arp 1.1.1.1 4e54.3800.0002 arpa
```

Related Commands

Command	Description
clear arp-cache	Clears the ARP cache table

Platform Description N/A

2.2 arp anti-ip-attack

For the messages corresponds to the directly-connected route, if the switch does not learn the ARP that corresponds to the destination IP address, it is not able to forward the message in hardware, and it needs to send the message to the CPU to resolve the address(that is the ARP

learning). Sending large number of this message to the CPU will influence the other tasks of the switch. To prevent the IP messages from attacking the CPU, a discarded entry is set to the hardware during the address resolution, so that all sequential messages with that destination IP address are not sent to the CPU. After the address resolution, the entry is updated to the forwarding status, so that the switch could forward the message with that destination IP address in hardware.

In general, during the ARP request ,if the switch CPU receives three destination IP address messages corresponding to the ARP entry, it is considered to be possible to attack the CPU and the switch sets the discarded entry to prevent the unknown unicast message from attacking the CPU. User could set the *num* parameter of this command to decide whether it attacks the CPU in specific network environment or disable this function. Use the **arp anti-ip-attack** command to set the parameter or disable this function. Use the **no** form of this command to restore the default setting.

arp anti-ip-attack *num*

no arp anti-ip-attack

Parameter Description

Parameter	Description
num	The number of the IP message to trigger the ARP to set the discarded entry in the range from 0 to 100. 0 stands for disabling the arp anti-ip-attack function.

Defaults By default, set the discarded entry after 3 unknown unicast messages are sent to the CPU.

Command Mode Global configuration mode.

Usage Guide The arp anti-ip-attack function needs to occupy the switch hardware routing resources when attacked by the unknown unicast message. If there are enough resources, the **arp anti-ip-attack *num*** could be smaller. If not, in order to preferential ensure the use of the normal routing, the *num* could be larger or disable this function.

Configuration Examples The following example sets the IP message number that triggers to set the discarding entry as 5.

```
Ruijie(config)# arp anti-ip-attack 5
```

The following example disables the ARP anti-ip-attack function.

```
Ruijie(config)# arp anti-ip-attack 0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.3 arp any-ip

Use this command to enable any IP ARP function.

Use the **no** form of this command to restore the default setting.

arp any-ip

no arp any-ip

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide You should modify the configuration to access the network in the following two cases:

The terminal IP address is in the network segment configured on an interface connected directly with the device, but the gateway IP address is not the IP address configured for the directly connected interface.

The terminal IP address is not in the network segment configured on the interface connected directly with the device. Instead, it is in another network segment, causing an IP address conflict.

If the terminal IP address is not in the connected network segment, the dynamic ARP table entries and directly connected routes are generated following ARP requests initiated by terminals. In the following two cases (but not limited to the following two cases), terminals cannot access the network and your terminal should re-learn the gateway IP address after clearing ARP table entries.

The device proxy responses the ARP request. After learning the device MAC address, dynamic ARP table entries and directly connected routes are cleared, the response packet cannot reach the terminal.

The device proxy responses the ARP request. The terminal disables any IP ARP and then enables it on the interface after the learning the devices MAC address.

Disabling any IP ARP will clear dynamic ARP table entries and directly connected routes, causing the response packet unable to reach the terminal.

If there are corresponding static ARP tables entries or ARP table entries of the VRRP IP address, dynamic ARP table entries generated by any IP ARP may be overwritten or not be added, causing any IP ARP failure.

Configuration Examples The following example enables any IP ARP function.

```
Ruijie(config)# interface gi 0/0
Ruijie(config-if-GigabitEthernet 0/0)# arp any-ip
```

The following example disables any IP ARP function.

```
Ruijie(config)# interface gi 0/0
Ruijie(config-if-GigabitEthernet 0/0)# no arp any-ip
```

Related

Command	Description

Commands	N/A	N/A

Platform Description N/A

2.4 arp cache interface-limit

Use this command to set the maximum number of ARP learned on the interface.

Use the **no** form of this command to restore the default setting.

arp cache interface-limit *limit*

no arp cache interface-limit

Parameter Description

Parameter	Description
limit	Sets the maximum number of ARP learned on the interface, including static and dynamic ARPs, in the range from 0 to the number supported on the interface. 0 indicates that the number is not limited.

Defaults The default is 0.

Command Mode Interface configuration mode

Usage Guide This function can prevent ARP attacks from generating ARP entries to consume memory. *limit* must be no smaller than the number of ARPs learned on the interface. Otherwise, the configuration does not take effect.

Configuration Examples The following example sets the maximum number of ARP learned on the interface to 300.

```
Ruijie(config)# interface gi 0/0
Ruijie(config-if-GigabitEthernet 0/0)# arp cache interface-limit 300
```

The following example restores the default setting.

```
Ruijie(config)# interface gi 0/0
Ruijie(config-if-GigabitEthernet 0/0)# no arp any-ip
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.5 arp fast-aging enable

Use this command to enable fast aging of ARP entreis. Use the **no** form of this command to restore the default setting.

arp fast-aging enable

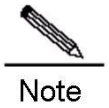
no arp fast-aging enable

Parameter Description	**Parameter**	**Description**
	N/A	N/A

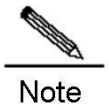
Defaults This function is disabled by default.

Command Mode Interface configuration mode.

Usage Guide By default, dynamic ARP entries start aging one hour after the aging of their corresponding MAC addresses. If this feature is configured, after their corresponding MAC address age, the dynamic ARP entries age immediately.



This command is supported on SVI and Overlay Router interfaces.



When ARP-to-host conversion is configured, it is recommended to enable this function at the same time, to help achieve fast route convergence.

Configuration Examples The following example enables fast aging of ARP entries on the SVI 2 interface.

```
Ruijie(config-if-VLAN 2)#arp fast-aging enable
```

Related Commands	**Command**	**Description**
	N/A	N/A

Platform Description N/A

2.6 arp gratuitous-send interval

Use this command to set the interval of sending the free ARP request message on the interface. Use the**no** form of this command to restore the default setting.

arp gratuitous-send interval *seconds*

no arp gratuitous-send

Parameter	**Parameter**	**Description**

Description		
	seconds	The time interval to send the free ARP request message in the range from 1 to 3600 in the unit of seconds.

Defaults This function is disabled by default.

Command Mode Interface configuration mode.

Usage Guide If an interface of the switch is used as the gateway of its downlink devices and counterfeit gateway behavior occurs in the downlink devices, you can configure to send the free ARP request message regularly on this interface to notify that the switch is the real gateway.

Configuration Examples The following example sets to send one free ARP request to SVI 1 per second.

```
Ruijie(config)# interface vlan 1
Ruijie(config-if)# arp gratuitous-send interval 1
```

The following example stops sending the free ARP request to SVI 1.

```
Ruijie(config)# interface vlan 1
Ruijie(config-if)# no arp gratuitous-send
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.7 arp mac-flapping resolve enable

Use this command to enable ARP probe upon MAC address flapping. Use the **no** form of this command to restore the default setting.

arp mac-flapping resolve enable

no arp mac-flapping resolve enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide If MAC address flapping occurs, namely, the layer-2 interface changes and is inconsistent with the interface recorded in the ARP entry, the device will continue to send ARP request packets to probe the actual interface until the probe succeeds.

The interface will not be updated immediately when MAC address flapping occurs. Instead, it will be updated after the probe finishes or after the device receives ARP response packets to learn the interface again. If there is consistent attack flow, the interface recorded in the ARP entry may not be consistent with the actual MAC address.

If you want to update the interface immediately when MAC address flapping occurs, please disable this command.

Configuration Examples The following example enables ARP probe upon MAC address flapping.

```
Ruijie(config)# arp mac-flapping resolve enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.8 arp mac-flapping resolve interval

Use this command to configure the ARP probe interval upon MAC address flapping. Use the **no** form of this command to restore the default setting.

arp mac-flapping resolve interval [*seconds*]

no arp mac-flapping resolve interval

Parameter Description

Parameter	Description
seconds	Sets the ARP probe interval in seconds. Min: 1.

Defaults The default interval is 2 seconds.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example sets the ARP probe interval to 5 seconds.

```
Ruijie(config)# arp mac-flapping resolve interval 5
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.9 arp mac-flapping resolve times

Use this command to configure the ARP probe count upon MAC address flapping. Use the **no** form of this command to restore the default setting.

arp mac-flapping resolve times [*number*]

no arp mac-flapping resolve times

Parameter Description	**Parameter**	**Description**
	number	Sets the ARP probe count. Min: 1

Defaults The default count is 5.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example sets the ARP probe count to 1.

```
Ruijie(config)# arp mac-flapping resolve times 1
```

Related Commands	**Command**	**Description**
	N/A	N/A

Platform Description N/A

2.10 arp l2port-down fast-delete

Use this command to delete ARP entries when L2 ports get down. Use the **no** form of this command to restore the default setting.

arp l2port-down fast-delete

no arp l2port-down fast-delete

Parameter Description	**Parameter**	**Description**
	N/A	N/A

Defaults By default, ARP entries are not deleted when L2 ports get down.

Command Mode Interface configuration mode.

Usage Guide Run the **arp l2port-down fast-delete** command on an SVI, so ARP entries are removed as soon as L2 ports under this SVI get down. Without configuring this feature, ARP entries are deleted only

after their aging time is reached.

Configuration Examples The following example enables fast removal of ARP entries when L2 ports get down.

```
Ruijie(config-if-VLAN 1)# arp l2port-down fast-delete
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.11 arp oob

Use this command to configure the static ARP on the management interface. Use the **no** form of this command to restore the default setting.

arp oob [*mgmt.-name*] *ip-address mac-address type*

no arp oob [*mgmt.-name*] *ip-address*

Parameter Description

Parameter	Description
ip-address	The IP address corresponding to the MAC address, written as four groups of dotted decimal values.
mac-address	The data link layer address, composed of 48 bits.
type	The ARP encapsulation type. The key word for the Ethernet interface is **arpa**.
mgmt.-name	Specifies the ARP-mapping management interface when there are multiple management interfaces.

Defaults No static ARP is configured by default.

Command Mode Global configuration mode

Usage Guide RGOS uses the ARP cache table to search for the 48-bit MAC address according to the 32-bit IP address.

Most hosts support dynamic ARP analysis, so static ARP mapping does not need to be configured.

The clear arp-cache oob command is used to clear the ARP mapping learned by the management port dynamically.

If no management interface is specified, the static ARP is configured on the first management interface by default. If you specify the first management interface, the *mgmt-name* parameter is not displayed by running the **show run** command.

Configuration Examples The following example configures a static ARP mapping record for the Ethernet host

```
Ruijie(config)# arp oob 1.1.1.1 4e54.3800.0002 arpa
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

2.12 arp rate-statistic enable

Use this command to enable ARP packet rate statistics collection. Use the **no** form of this command to disable ARP packet rate statistics collection.

arp rate-statistic enable

no arp rate-statistic enable

Parameter Description	Parameter	Description
	N/A	N/A

Defaults N/A

Command Mode Global configuration mode

Default Level 2

Usage Guide ARP packet rate statistics collection is disabled by default. If it is enabled, the ARP packet receiving/sending rate is measured on all interfaces.

Configuration Examples The following example enables statistics collection of ARP packet rates in global configuration mode.

```
Ruijie(config)#arp rate-statistic enable
```

Verification Run the **show this** or **show run-config** command to display configurations.

2.13 arp rate-statistic compute interval

Use this command to set the interval of ARP packet rate statistics collection. Use the **no** form of this command to cancel the interval of ARP packet rate statistics collection.

arp rate-statistic compute interval *seconds*

no arp rate-statistic compute interval

Parameter Description	Parameter	Description
	seconds	Sampling interval, not less than 1s

Defaults ARP packet rate statistics are collected at an interval of 5s by default.

Command Mode Global configuration mode

Default Level 2

Usage Guide The sampling interval is 5s by default. This command is used to adjust the interval for collecting ARP packet receiving/sending statistics.

Configuration Examples The following example modifies the interval of packet rate statistics collection in global configuration mode.

```
Ruijie(config)#arp rate-statistic compute interval 10
```

Verification Run the **show this** or **show run-config** command to display configurations.

2.14 arp reply-auto-learning enable

Use this command to enable passive ARP response packet learning. Use the **no** form of this command to restore the default setting.

arp reply-auto-learning enable

no arp reply-auto-learning enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide The device does not learn ARP response packets when it does not send ARP request packets by default. Run the **arp reply-auto-learning enable** command to enable passive ARP response packet learning.

Configuration Examples The following example enables passive ARP response packet learning.

```
Ruijie(config)# arp reply-auto-learning enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.15 arp retry interval

Use this command to set the frequency for sending the arp request message locally, namely, the time interval between two continuous ARP requests sent for resolving one IP address. Use the **no** form of this command to restore the default setting.

arp retry interval *seconds*

no arp retry interval

Parameter Description

Parameter	Description
seconds	Time for retransmitting the ARP request message in the range from 1 to 3600 in the unit of seconds.

Defaults The default is 1.

Command Mode Global configuration mode.

Usage Guide The switch sends the ARP request message frequently, and thus causing problems like network busy. In this case, you can set the retry interval of the ARP request message longer. In general, it should not exceed the aging time of the dynamic ARP entry.

Configuration Examples The following example sets the retry interval of the ARP request as 30 seconds.

```
Ruijie(config)# arp retry interval 30
```

Related Commands

Command	Description
arp retry times	Number of times for retransmitting an ARP request message.

Platform Description N/A

2.16 arp retry times

Use this command to set the local retry times of the ARP request message, namely, the times of sending the ARP request message to resolve one IP address. Use the **no** form of this command to restore the default setting.

arp retry times *number*

no arp retry times

Parameter Description

Parameter	Description
number	The times of sending the same ARP request in the range from 1 to100.When it is set as 1, it indicates that the ARP request is not retransmitted, only 1 ARP request message is sent.

Defaults The default is 5.

Command Mode Global configuration mode.

Usage Guide The switch sends the ARP request message frequently, and thus causing problems like network busy. In this case, you can set the retry times of the ARP request smaller. In general, the retry times should not be set too large.

Configuration Examples The following example sets the local ARP request not to be retried.

```
Ruijie(config)# arp retry times 1
```

The following example sets the local ARP request to be retried for one time.

```
Ruijie(config)# arp retry times 2
```

Related Commands

Command	Description
arp retry interval	Interval for retransmitting an ARP request message

Platform Description N/A

2.17 arp scan auto

Use this command to enable scheduled automatic ARP scanning.

arp scan auto [*start-ip-address end-ip-address*]

Parameter Description

Parameter	Description
start-ip-address	Specifies the start IP address of the ARP scan range. The start IP address must be smaller than or equal to the end IP address.
end-ip-address	Specifies the end IP address of the ARP scan range. The end IP address must be greater than or equal to the start IP address.

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Default Level 2

Usage Guide

- This function is enabled to perform scheduled automatic ARP scanning once every 5 minutes by default.
- The IP address with existing neighboring ARP entries is not scanned.
- If you know the allocated IP address range in a LAN, you can specify the ARP scan range. The number of the specified IP addresses cannot be greater than 1,024.
- The start/end IP address of the ARP scan range must be in the same network segment as the

interface IP address.

- ARP scanning takes effect on UP interfaces only.

Configuration Examples The following example enables scheduled automatic ARP scanning with the IP address range specified.

```
Ruijie(config)# interface vlan 10
Ruijie(config-if-VLAN 10)# arp scan auto 1.1.1.1 1.1.1.10
```

Verification Run the **show run-config** command to display configurations.

Prompts 1. If the start/end IP address is not a valid host address, the start IP address is greater than the end IP address, or the start/end IP address is not in the same network segment as the interface IP address, the following information is displayed:

```
Invalid ip address range.
```

2. If the number of IP addresses in the specified range is greater than 1,024, the following information is displayed:

```
Failed to scan because ip address range is larger than 1024.
```

Common Errors

1. The start IP address is greater than the end IP address.
2. The start/end IP address is not in the same network segment as the interface IP address.

2.18 arp scan interval

Use this command to configure the scheduled automatic ARP scanning interval.

arp scan interval *minutes*

Parameter Description

Parameter	Description
minutes	Sets the automatic ARP scanning interval in minutes. The value ranges from 1 to 30.

Defaults The automatic ARP scanning interval is 5 minutes by default.

Command Mode Global configuration mode

Default Level 2

Usage Guide After automatic scanning is enabled on interfaces, this command is used to configure the scanning interval, which is 5 minutes by default.

The scheduled scanning interval indicates the duration between the end of scanning on all interfaces and the start of the next scanning.

Configuration Examples The following example configures the scheduled automatic ARP scanning interval to 1 minute.

```
Ruijie(config)# arp scan interval 1
```

Verification Run the **show run-config** command to display configurations.

2.19 arp scan rate

Use this command to configure the scheduled automatic ARP scanning rate.

arp scan rate *rate-value*

Parameter Description	**Parameter**	**Description**
	rate-value	Sets the scheduled automatic ARP scanning rate in pps. The value ranges from 1 to 100.

Defaults The default scanning rate is 20 pps.

Command Mode Global configuration mode

Usage Guide

- The scanning rate indicates the maximum rate of scanning in the case of normal responses from the host to the scanning device.
- If the scanning rate is 100pps, it indicates that the device scans a maximum of 100 IP addresses per second.
- If the device scans all IP addresses in the required network segment and already learns ARP entries, the rate of next scanning is 0.

Configuration Examples The following example sets the scheduled automatic ARP scanning rate to 80pps.

```
Ruijie(config)# arp scan rate 80
```

Verification Run the **show run-config** command to display configurations.

2.20 arp-suppress-auth-vlan-req

Use this command to disable the SVI interface from sending the ARP request to the authentication VLAN. Use the **no** form of this command to disable this function.

arp suppress-auth-vlan-req

no arp suppress-auth-vlan-req

Parameter Description	**Parameter**	**Description**
	N/A	N/A

Defaults This function is enabled by default.

Command Mode Interface configuration mode

Usage Guide In gateway authentication mode, all sub-VLANs of SuperVLAN are authentication VLANs by default.

Users on authentication VLANs should pass the authentication before accessing the network. Static ARP table entries are generated on the device after users pass authentication. The device does not need to send ARP requests to the authentication VLAN when accessing these users. If the device accesses users on the authentication-exemption VLAN, it only needs to send ARP requests to the authentication-exemption VLAN.
In gateway authentication mode, the device enables suppression of ARP request sent to the authentication VLAN by default. If the device needs to access authentication-exemption users on the authentication VLAN, this function should be disabled.

Configuration Examples The following example disables VLAN 2 from sending the ARP request to the authentication VLAN.

```
Ruijie(config)# interface vlan 2
Ruijie(config-if-VLAN 2)# arp suppress-auth-vlan-req
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.21 arp switch-over resolve

Use this command to enable active ARP resolution during active/standby switchovers in global configuration mode. Use the **no** form of this command to disable active ARP resolution during active/standby switchovers.
arp switch-over resolve
no arp switch-over resolve

Parameter Description

Parameter	Description
N/A	N/A

Defaults Active ARP resolution during active/standby switchovers is disabled by default.

Command Mode Global configuration mode

Default Level 2

Usage Guide N/A

Configuration Examples The following example enables active ARP resolution during active/standby switchovers.

```
Ruijie(config)# arp switch-over resolve
```

Verification Run the **show running-config** command to display configurations.

2.22 arp timeout

Use this command to configure the timeout for the ARP static mapping record in the ARP cache. Use the **no** form of this command to restore the default setting.

arp timeout *seconds*

no arp timeout

Parameter Description

Parameter	Description
secondsv	The timeout is in the range from 0 to 2147483 in the unit of seconds.

Defaults The default is 3600.

Command Mode Interface configuration mode/Global configuration mode

Usage Guide The ARP timeout setting is only applicable to the IP address and the MAC address mapping that are learned dynamically. The shorter the timeout, the truer the mapping table saved in the ARP cache, but the more network bandwidth occupied by the ARP. Hence the advantages and disadvantages should be weighted. Generally it is not necessary to configure the ARP timeout unless there is a special requirement.

The ARP timeout configuration is supported in both global and interface configuration modes and interface configuration mode has a higher priority over the global configuration mode. If interface 1 is configured with 3000s ARP timeout in global configuration mode and 1800s ARP timeout in interface configuration mode, the 1800s configuration takes effect. ARP timeout for the other interfaces is determined by global configuration, namely, 3000s.

Configuration Examples The following example sets the timeout for the dynamic ARP mapping record that is learned dynamically from FastEthernet port 0/1 to 120s.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# arp timeout 120
```

The following example sets the ARP timeout to 3000s.

```
Ruijie(config)# arp timeout 3000
```

Related Commands

Command	Description
clear arp-cache	Clears the ARP cache list.
show interface	Displays the interface information.

Platform Description N/A

2.23 arp track

Use this command to enable the ARP link tracking function. Use the **no** form of this command to

restore the default setting.

arp [**vrf** *name*] *ip-address* **track** *object-number*

no arp [**vrf** *name*] *ip-address* **track** *object-number*

Parameter Description

Parameter	Description
vrf *name*	VRF instance. By default, no VRF instance is configured.
ip-address	IP address of an ARP entry
track *object-number*	Specifies track object ID, in the range from 1 to 700.

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide When the track object is down, the ARP entry is deleted. If there are still packets destined to this IP address, the device sends ARP broadcast packets to learn ARP again. This function is applied to the situation when the downlink devices perform switchover and the active device does not send gratuitous ARP, leading to failure to update MAC table on the uplink device. After this function is enabled, the ARP entry is deleted when the destination IP address is unreachable. The device learns ARP again to trigger ARP response from the downlink device, updating the MAC table on the uplink device.

Configuration Examples The following example configures track object 1 for ARP entry 1.1.1.1. If track object 1 is unreachable, ARP entry 1.1.1.1 is deleted.

```
Ruijie(config)# arp 1.1.1.1 track  1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.24 arp trust-monitor enable

Use this command to enable egress gateway trusted ARP. Use the **no** form of this command to restore the default setting.

arp trust-monitor enable

no arp trust-monitor enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide The egress gateway trusted ARP is different from GSN trusted ARP. With this function enabled, the device sends a unicast request for confirmation when learning an ARP table entry. The device learns the ARP table entry after receiving the response. When the device receives the ARP packet, only if the ARP table entry is aged or incomplete and the ARP packet is a response packet will the packet be handled. After egress gateway trusted ARP is enabled, the aging time of the ARP table entry turns to 60 seconds. After this function is disabled, the aging time restores to 3600 seconds.

Configuration Examples The following example enables egress gateway trusted ARP.

```
Ruijie(config)# interface gi 0/0
Ruijie(config-if-GigabitEthernet 0/0)# arp trust-monitor enable
```

The following example disables engress gateway trusted ARP.

```
Ruijie(config)# interface gi 0/0
Ruijie(config-if-GigabitEthernet 0/0)# no arp trust-monitor enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.25 arp unresolve

Use this command to set the maximum number of the unresolved ARP entries. Use **no** form of this command to restore the default setting.

arp unresolve *number*

no arp unresolve

Parameter Description

Parameter	Description
number	The maximum number of the unresolved ARP entries in the range from 1 to the ARP table size supported by the device.

Defaults The default is the ARP table size supported by the device.

Command Mode Global configuration mode.

Usage Guide If there are a large number of unresolved entries in the ARP cache table and they do not disappear after a period of time, this command can be used to limit the quantity of the unresolved entries.

The maximum number of the unresolved ARP entries limits the number of neighbors that can be resolved at a time. If the device needs to resolve a large number of neighbors, it will take a long time to finish resolving all neighbors if the arp unresolve number is set to a small value.

Configuration Examples The following example sets the maximum number of the unresolved items to 500.

```
Ruijie(config)# arp unresolve 500
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.26 arp vxlan learning-enable

Use this command to enable ARP entry learning based on ARP packets on Overlay router interfaces. Use the **no** form of this command to disable automatic ARP entry learning on Overlay router interfaces.

arp vxlan learning-enable

no arp vxlan learning-enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults Automatic ARP entry learning is enabled on all Overlay router interfaces by default.

Command Mode Global configuration mode

Default Level 2

Usage Guide When ARP entries are delivered through the SDN controller in a unified manner from Overlay router interfaces, disable the automatic ARP entry learning on the interfaces. After it is disabled, automatic ARP entry learning is not conducted after ARP packets are received from Overlay router interfaces.

Configuration Examples The following example disables automatic ARP entry learning on all Overlay router interfaces.

```
Ruijie(config)#no arp vxlan learning-enable
```

Verification Run the **show running-config** command to display configurations.

2.27 arp vxlan remote-arp inactive

Use this command to disable generating of host routes after EVPN synchronizes ARP entries to Overlay

router interfaces. Use the **no** form of this command to enable this function.

arp vxlan remote-arp inactive

no arp vxlan remote-arp inactive

Parameter Description	Parameter	Description
	N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Default Level 2

Usage Guide N/A

Configuration Examples The following example enables generating of host routes after EVPN synchronizes ARP entries to Overlay router interfaces t.

```
Ruijie(config-if-OverlayRouter 1)#no arp vxlan remote-arp inactive
```

Verification Run the **show running-config** command to display configurations.

2.28 arp vxlan sdn-reply

Use this command to enable the SDN controller to respond to ARP requests of Overlay router interfaces. Use the **no** form of this command to restore the default settings.

arp vxlan sdn-reply

no arp vxlan sdn-reply

Parameter Description	Parameter	Description
	N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Default Level 2

Usage Guide After this function is enabled, ARP requests of terminals are sent to the SDN controller for responses.

Configuration Examples The following example enables the SDN controller to respond to ARP requests of Overlay router interfaces.

```
Ruijie(config)#arp vxlan sdn-reply
```

Verification Run the **show running-config** command to display configurations.

2.29 arp vxlan suppress gratuitous-arp

Use this command to enable free ARP request suppression on Overlay router interfaces. Use the **no** form of this command to restore the default settings.

arp vxlan suppress gratuitous-arp

no arp vxlan suppress gratuitous-arp

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Default Level 2

Usage Guide In the SDN environment, enable free ARP request suppression on Overlay router interfaces, to prevent the problem that the terminals no longer send ARP requests after learning the ARP entries from the free ARP packets sent by VXLAN gateways.

Configuration Examples The following example enables free ARP request suppression on all Overlay router interfaces.

```
Ruijie(config)#arp vxlan suppress gratuitous-arp
```

Verification Run the **show running-config** command to display configurations.

2.30 arp vxlan gratuitous-send interval

Use this command to enable Overlay router interfaces to send gratuitous ARP packets. Use the **no** form of this command to restore the default setting.

arp vxlan gratuitous-send interval *seconds*

no arp vxlan gratuitous-send interval

Parameter Description

Parameter	Description
seconds	Specifies the interval to send gratuitous ARP packets in the range from 1s to 3,600s.

Defaults By default, this function is disabled.

Command Mode Global configuration mode

Usage Guide In the SDN environment, to prevent the problem that aging of the virtual MAC address of the overlay network gateway could lead to flooding of VXLAN-related traffic and thus affect device performance, enable Overlay router interfaces to actively send gratuitous ARP request packets.

Configuration Examples The following example enable all active Overlay router interfaces to send gratuitous ARP packets every 200s.

```
Ruijie(config)#arp vxlan gratuitous-send interval 200
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.31 clear arp-cache

Use this command to remove a dynamic ARP mapping record from the ARP cache table and clear an IP route cache table.

clear arp-cache [**vrf** *vrf_name*] [*ip* [*mask*]] | **interface** *interface-name* | **vxlan** | **all-vrf** [*ip* [*mask*]]]

Parameter Description

Parameter	Description
vrf *vrf_name*	Deletes dynamic ARP entries of the specified VRF instance. The default is the public instance.
ip	Deletes ARP entries of the specified IP address. If *trusted* value is specified, trusted ARP entries are deleted; otherwise, all dynamic ARP entries are deleted which is the default.
mask	Deletes ARP entries in a subnet mask. If *trusted* value is specified, trusted ARP entries in the subnet mask are deleted; otherwise, all dynamic ARP entries are deleted. The dynamic ARP entry specified by the IP address is deleted by default.
interface *interface-name*	Deletes dynamic ARP entries on the specified interface. Dynamic ARP entries are deleted on all interfaces by default.
vxlan	Deletes VXLAN-related entries, namely, ARP entries on the overlayer router interface.
all-vrf	Deletes dynamic ARP entries in all VRF.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command can be used to refresh an ARP cache table.
On a NFPP-based (Network Foundation Protection Policy) device, it receives one ARP packet for every mac/ip address per second by default. If the interval of two **clear arp** times is within 1s, the second response packet will be filtered and the ARP packet will not be resolved for a short time.

Configuration Examples The following example deletes all dynamic ARP mapping records.

```
Ruijie# clear arp-cache
```

The following deletes the dynamic ARP entry 1.1.1.1.

```
Ruijie# clear arp-cache 1.1.1.1
```

The following example deletes the dynamic ARP entry on interface SVI1.

```
Ruijie# clear arp-cache interface Vlan 1
```

The following example deletes dynamic ARP entries in all VRF.

```
Ruijie# clear arp-cache all-vrf
```

Related Commands

Command	Description
arp	Adds a static mapping record to the ARP cache table.

Platform Description N/A

2.32 clear arp-cache oob

Use this command to clear dynamic ARP mapping records.
clear arp-cache oob [*ip* [*mask*]]

Parameter Description

Parameter	Description
ip	Clears the ARP table entriy of the specified IP address. All dynamic ARP table entries are cleared by default.
mask	Clears the ARP table entry within the specified subnet. The dynamic ARP table entry of the specified IP address (the previous parameter) is cleared by default.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide On a device supporting Network Foundation Protection Policy (NFPP), every MAC / IP address receives an ARP packet per second by default. If the **clear arp oob** command is run twice within one second, the second response packet may be filtered, causing ARP uanalysis for a short time.

Configuration Examples

The following example clears the cache table of dynamic ARP mapping records.

```
Ruijie# clear arp-cache oob
```

The following example clears dynamic ARP table entry 1.1.1.1.

```
Ruijie# clear arp-cache oob 1.1.1.1
```

The following example clears the dynamic ARP table entry within the specified subnet.

```
Ruijie# clear arp-cache oob 1.0.0.0 255.0.0.0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.33 clear arp-cache packet statistics

Use this command to clear ARP packet statistics.

clear arp-cache packet statistics *[interface]*

Parameter Description

Parameter	Description
interface	Interface name

Defaults N/A

Command Mode Privileged EXEC mode

Default Level 2

Usage Guide This command is used to clear ARP packet statistics.

Configuration Examples

The following example clears ARP packet statistics in privileged EXEC mode.

```
Ruijie#sho arp-cache packet statistics
```

The following example clears ARP packet statistics on a specified interface in privileged EXEC mode.

```
Ruijie#sho arp-cache packet statistics vlan 90
```

Verification Run the **show arp packet statistics** command to display configurations.

Prompts N/A

Common Errors N/A

Platform Description	N/A

2.34 ip proxy-arp

Use this command to enable ARP proxy function on the interface. Use the **no** form of this command to restore the default setting.

ip proxy-arp

no ip proxy-arp

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Interface configuration mode.

Usage Guide Proxy ARP helps those hosts without routing message obtain MAC address of other networks or subnet IP address. For example, a device receives an ARP request. The IP addresses of request sender and receiver are in different networks. However, the device that knows the routing of IP address of request receiver sends ARP response, which is Ethernet MAC address of the device itself.

Configuration Examples The following example enables ARP on FastEthernet port 0/1.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip proxy-arp
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.35 local-proxy-arp

Use this command to enable local proxy ARP on the SVI interface. Use the **no** form of this command to restore the default setting.

local-proxy-arp

no local-proxy-arp

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Interface configuration mode

Usage Guide With local proxy ARP enabled, the device helps a host to obtain MAC addresses of other hosts on the subnet. If the device enables switchport protected, users on different ports are segregated on layer 2. After local proxy ARP is enabled, the device serves as a proxy to send a response after receiving an ARP request. The ARP response contains a MAC address which is the device's Ethernet MAC address, realizing communication between different hosts through L3 routes.

Configuration Examples The following example enables local proxy ARP on VLAN1.

```
Ruijie(config)# interface vlan 1
Ruijie(config-if-VLAN 1)# local-proxy-arp
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.36 show arp

Use this command to display the Address Resolution Protocol (ARP) cache table

show arp [[**vrf** *vrf-name*] [**trusted**] *ip* [*mask*] | **static** | **complete** | **incomplete** | *mac-address*]

Parameter Description

Parameter	Description
ip	Displays the ARP entry of the specified IP address.
vrf vrf-name	VRF instance, which Displays the ARP entry with specified VRF.
ip mask	Displays the ARP entries of the network segment included within the mask.
trusted	Displays the trusted ARP entries. Currently, only the global VRF supports the trusted ARP.
static	Displays all the static ARP entries.
complete	Displays all the resolved dynamic ARP entries.
incomplete	Displays all the unresolved dynamic ARP entries.
mac-address	Displays the ARP entry with the specified mac address.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the output result of the **show arp** command:

```
Ruijie# show arp
Total Numbers of Arp: 7
Protocol Address Age(min) Hardware Type Interface
Internet 192.168.195.68 0 0013.20a5.7a5f arpa VLAN 1
Internet 192.168.195.67 0 001a.a0b5.378d arpa VLAN 1
Internet 192.168.195.65 0 0018.8b7b.713e arpa VLAN 1
Internet 192.168.195.64 0 0018.8b7b.9106 arpa VLAN 1
Internet 192.168.195.63 0 001a.a0b5.3990 arpa VLAN 1
Internet 192.168.195.62 0 001a.a0b5.0b25 arpa VLAN 1
Internet 192.168.195.5 -- 00d0.f822.33b1 arpa VLAN 1
```

The meaning of each field in the ARP cache table is described as below:

Table 1 Fields in the ARP cache table

Field	Description
Protocol	Protocol of the network address, always to be Internet
Address	IP address corresponding to the hardware address
Age (min)	Age of the ARP cache record, in minutes; If it is not locally or statically configured, the value of the field is represented with “-”.
Hardware	Hardware address corresponding to the IP address
Type	Hardware address type, ARPA for all Ethernet addresses
Interface	Interface associated with the IP addresses

The following example displays the output result of show arp 192.168.195.68

```
Ruijie# show arp 192.168.195.68
Protocol Address Age(min) Hardware Type Interface
Internet 192.168.195.68 1 0013.20a5.7a5f arpa VLAN 1
```

The following example displays the output result of **show arp** 192.168.195.0 255.255.255.0

```
Ruijie# show arp 192.168.195.0 255.255.255.0
Protocol Address Age(min) Hardware Type Interface
Internet 192.168.195.64 0 0018.8b7b.9106 arpa VLAN 1
Internet 192.168.195.2 1 00d0.f8ff.f00e arpa VLAN 1
Internet 192.168.195.5 -- 00d0.f822.33b1 arpa VLAN 1
Internet 192.168.195.1 0 00d0.f8a6.5af7 arpa VLAN 1
Internet 192.168.195.51 1 0018.8b82.8691 arpa VLAN 1
```

The following example displays the output result of **show arp** 001a.a0b5.378d

```
Ruijie# show arp 001a.a0b5.378d
```

```
Protocol Address Age(min) Hardware Type Interface
Internet 192.168.195.67 4 001a.a0b5.378d arpa VLAN 1
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

2.37 show arp oob

Use this command to display the ARP cache table.

show arp oob [*ip* [*mask*] | **static** | **complete** | **incomplete** | *mac-address*]

Parameter Description	Parameter	Description
	ip	Displays ARP table entries of the specified IP address.
	mask	Displays ARP table entries within the IP subnet.
	static	Displays all static ARP table entries.
	complete	Displays all analyzed ARP table entries.
	incomplete	Displays all unanalyzed ARP table entries.
	mac-address	Displays ARP table entries of the specified MAC address.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to display the ARP cache table. The **complete** / **incomplete** key word represents analyzed / unanalyzed ARP table entries.

Configuration Examples The following example displays the outcome of the running the show arp oob command.

```
Ruijie# show arp oob
Total Numbers of Arp: 7
Protocol  Address         Age(min)  Hardware       Type   Interface
Internet  192.168.195.68   0        0013.20a5.7a5f  arpa   mgmt 0
Internet  192.168.195.67   0        001a.a0b5.378d  arpa   mgmt 0
Internet  192.168.195.65   0        0018.8b7b.713e  arpa   mgmt 0
Internet  192.168.195.64   0        0018.8b7b.9106  arpa   mgmt 0
Internet  192.168.195.63   0        001a.a0b5.3990  arpa   mgmt 0
Internet  192.168.195.62   0        001a.a0b5.0b25  arpa   mgmt 0
Internet  192.168.195.5    --       00d0.f822.33b1  arpa   mgmt 0
```

The following example displays the outcome of running the **show arp oob** 192.168.195.68 command.

```
Ruijie# show arp oob 192.168.195.68
Protocol  Address         Age(min)  Hardware       Type   Interface
Internet  192.168.195.68   1        0013.20a5.7a5f  arpa   mgmt 0
```

The following example displays the outcome of running the show arp oob 192.168.195.0 255.255.255.0.

```
Ruijie# show arp 192.168.195.0 255.255.255.0
Protocol  Address        Age(min)  Hardware       Type   Interface
Internet  192.168.195.64   0       0018.8b7b.9106  arpa   mgmt 0
Internet  192.168.195.2    1       00d0.f8ff.f00e  arpa   mgmt 0
Internet  192.168.195.5    --      00d0.f822.33b1  arpa   mgmt 0
Internet  192.168.195.1    0       00d0.f8a6.5af7  arpa   mgmt 0
Internet  192.168.195.51   1       0018.8b82.8691  arpa   mgmt 0
```

The following example displays the outcome of running the show arp oob 001a.a0b5.378d command.

```
Ruijie# show arp 001a.a0b5.378d
Protocol  Address         Age(min)  Hardware       Type   Interface
Internet  192.168.195.67   4        001a.a0b5.378d  arpa   mgmt 0
```

Field	Description
Protocol	Only “Internet“ is available at present, which indicates the IP protocol.
Address	The IPv4 address.
Age(min)	The age of the table entry. For the local IP address, the field is displayed as ’-’. For the static table entry, the field is displayed as <static>. For the dynamic table entry, the field indicates the time for which the table entry has been learned, in the unit of minutes.
Hardware	48-bit MAC address, written as a dotted triple of four-digit hexadecimal numbers.
Type	Only “arpa” is available at present.
Interface	The L3 interface corresponding to the ARP table entry. The field is NULL for static ARP table entries for the IP address of the static ARP is not within any network segment directly connected with the device.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.38 show arp counter

Use this command to display the number of ARP entries in the ARP cache table.

show arp counter

Parameter Description	Parameter	Description
	N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the output result of the **show arp counter** command:

```
Ruijie# show arp counter
The Arp Entry counter:0
The Unresolve Arp Entry:0
```

The meaning of each field in the ARP cache table is described in Table 1.

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

2.39 show arp detail

Use this command to display the details of the Address Resolution Protocol (ARP) cache table.

show arp detail [*interface-type interface-number* | [*ip* [*mask*]] | [**vrf** *vrf-name*] [*ip* [*mask*] | *mac-address* | **static** | **complete** | **incomplete**] | **subvlan** { *subvlan-number* | **min-max** *min_value max_value*]

Parameter Description	Parameter	Description
	interface-type interface-number	Displays the ARP of the layer 2 port or the layer 3 interface.
	vrf *name*	VRF instance. By default, no VRF instance is configured.
	ip	Displays the ARP entry of the specified IP address.
	ip mask	Displays the ARP entries of the network segment included within the mask.
	mac-address	Displays the ARP entry of the specified MAC address.
	static	Displays all the static ARP entries.
	completev	Displays all the resolved dynamic ARP entries.
	incomplete	Displays all the unresolved dynamic ARP entries.
	subvlan	Displays the ARP entries of the specified subvlan

subvlan-number	Subvlan ID
min-max	Displays the minimum and maxinum subvlan ID
min_value	Minimum subvlan ID
max_value]	Maximum subvlan ID.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Use this command to display the ARP details, such as the ARP type (Dynamic, Static, Local, Trust), the information on the layer2 port.
If you enter a *min_value* greater than *max_value*, no error message is prompted. Instead, ARP entries corresponding to the subvlan are displayed.

Configuration Examples The following example displays the output result of the **show arp detail** command:

```
Ruijie# show arp detail
IP Address MAC Address Type Age(min) Interface Port
20.1.1.1 000f.e200.0001 Static -- -- --
20.1.1.1 000f.e200.0001 Static -- Vl3 --
20.1.1.1 000f.e200.0001 Static -- Vl3 Gi2/0/1
193.1.1.70 00e0.fe50.6503 Dynamic 1 Vl3 Gi2/0/1
192.168.0.1 0012.a990.2241 Dynamic 10 Gi2/0/3 Gi2/0/3
192.168.0.1 0012.a990.2241 Dynamic 20 Ag1 Ag1
192.168.0.1 0012.a990.2241 Dynamic 30 Vl2 Ag2
192.168.0.39 0012.a990.2241 Local -- Vl3 --
192.168.0.39 0012.a990.2241 Local -- Gi2/0/3 --
192.168.0.1 0012.a990.2241 Local -- Vl3 --
192.168.0.1 0012.a990.2241 Local -- Gi2/3/2 --
```

The meaning of each field in the ARP cache table is described as below:

Table 1 Fields in the ARP cache table

Field	Description
IP Address	IP address corresponding to the hardware address
MAC Address	hardware address corresponding to the IP address
Age (min)	Age of the ARP learning, in minutes
Port	Layer2 port associated with the ARP
Type	ARP type, includes the Static, Dynamic, Trust,Local
Interface	Layer 3 interface associated with the IP addresses
Subvlan	Subvlan corresponding to the ARP entries

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

2.40 show arp packet statistics

Use this command to display the statistics of ARP packets.

show arp packet statistics [*interface-name*]

Parameter Description	Parameter	Description
	interface-name	Displays the statistics of ARP packets on the specified interface.

Defaults N/A.

Command Mode Privileged EXEC mode.

Usage Guide N/A.

Configuration Examples The following example displays the output information of the command.

```
Ruijie# show arp packet statistics
Interface Received Received Received Sent Sent
Name Requests Replies Others Requests Replies
--------- -------- -------- -------- -------- -------
VLAN 1 10 20 1 50 10
VLAN 2 5 8 0 10 10
VLAN 3 20 5 0 15 12
VLAN 4 5 8 0 10 10
VLAN 5 20 5 0 15 12
VLAN 6 20 5 0 15 12
VLAN 7 20 5 0 15 12
VLAN 8 5 8 0 10 10
VLAN 9 20 5 0 15 12
VLAN 10 20 5 0 15 12
VLAN 11 20 5 0 15 12
VLAN 12 20 5 0 15 12
```

Description of fields:

Field	description
Received Requests	Number of received ARP requests
Received Replies	Number of received ARP response messages
Received Others	Number of other received ARP packets

Sent Requests	Number of sent ARP requests
Sent Replies	Number of sent ARP requests

Related Commands	Command	Description
	N/A.	N/A.

Platform Description N/A

2.41 show arp rate-statistic

Use this command to display ARP packet rate statistics.

show arp rate-statistic [*interface*]

Parameter Description	Parameter	Description
	interface	Name of interface on which ARP packet rate statistics are to be displayed.

Defaults N/A

Command Mode User configuration mode

Default Level 2

Usage Guide N/A

Configuration Examples The following example displays ARP packet rate statistics on all interfaces.

```
Ruijie(config)#show arp rate-statistic
Interface                              Sampling     Received     Received
Received     Sent         Sent
Name                                  time         Requests(pps) Replies(pps)
Others(pps)   Requests(pps) Replies(pps)
--------------------                    --------     --------     --------
--------     --------     -------
TenGigabitEthernet 0/15                 1           0           0           0
1           0
Mgmt 0                                 1           7           0           0
0           0
Ruijie(config)#
```

The following example displays ARP packet rate statistics on one interface.

```
Ruijie(config)#show arp rate-statistic interface vlan 250
Interface                              Sampling     Received     Received
Received     Sent         Sent
```

```
Name                                  time         Requests(pps)  Replies(pps)
Others(pps)   Requests(pps)  Replies(pps)
--------------------                    --------     --------     --------
--------     --------     -------
VLAN 250                               1            0            0            0
0           0
Ruijie(config)#
```

2.42 show arp timeout

Use this command to display the aging time of a dynamic ARP entry on the interface.

show arp timeout

Parameter Description	**Parameter**	**Description**
	N/A.	N/A.

Defaults N/A.

Command Mode Privileged EXEC mode

Usage Guide N/A.

Configuration Examples The following example displays the output of the **show arp timeout** command:

```
Ruijie# show arp timeout
Interface arp timeout(sec)
---------------------- ----------------
VLAN 1  3600
```

The meaning of each field in the ARP cache table is described in Table 1.

Related Commands	**Command**	**Description**
	N/A.	N/A.

Platform Description N/A

2.43 show arp flapping record

Use this command to display the record of ARP entry flapping.

show arp flapping record

Parameter	**Parameter**	**Description**

Description	N/A.	N/A.

Defaults N/A.

Command Mode Privileged EXEC mode.

Usage Guide ARP entry flapping occurs when an IP address is associated with different MAC addresses.

Configuration Examples The following example displays the record of ARP entry flapping:

```
Ruijie# show arp flapping record
Arp flapping recorded:
  Arp flapping record max count: 10240
  Arp flapping record current count: 0
  Arp flapping record history count: 0
  Move-Time    Ip-address        Original-Mac        Move-Mac          Port
Vid
Total flapping record: 0
```

Field description:

Field	Description
Move-Time	The time when flapping happens.
Ip-address	The IP address to which the flapping happens.
Original-Mac	The MAC address associated with the IP address before the flapping.
Move-Mac	The MAC address associated with the IP address after the flapping.
Port	The port where the flapping happens.
Vid	ID of the VLAN where the flapping happens.

Related Commands	Command	Description
	N/A.	N/A.

Platform Description N/A

2.44 show ip arp

Use this command to display the Address Resolution Protocol (ARP) cache table.

show ip arp

Parameter Description	Parameter	Description
	N/A.	N/A.

Defaults N/A.

Command Mode Privileged EXEC mode.

Usage Guide N/A.

Configuration Examples The following example displays the output of **show ip arp**:

```
Ruijie# show ip arp
Protocol Address Age(min)Hardware Type Interface
Internet 192.168.7.233 23 0007.e9d9.0488 ARPA FastEthernet 0/0
Internet 192.168.7.112 10 0050.eb08.6617 ARPA FastEthernet 0/0
Internet 192.168.7.79 12 00d0.f808.3d5c ARPA FastEthernet 0/0
Internet 192.168.7.1 50 00d0.f84e.1c7f ARPA FastEthernet 0/0
Internet 192.168.7.215 36 00d0.f80d.1090 ARPA FastEthernet 0/0
Internet 192.168.7.127 0 0060.97bd.ebee ARPA FastEthernet 0/0
Internet 192.168.7.195 57 0060.97bd.ef2d ARPA FastEthernet 0/0
Internet 192.168.7.183 -- 00d0.f8fb.108b ARPA FastEthernet 0/0
```

Each field in the ARP cache table has the following meanings:

Field	Description
Protocol	Network address protocol, always Internet.
Address	The IP address corresponding to the hardware address.
Age (min)	Age of the ARP cache record, in minutes; If it is not locally or statically configured, the value of the field is represented with “-”.
Hardware	Hardware address corresponding to the IP address
Type	The type of hardware address. The value is ARPA for all Ethernet addresses.
Interface	Interface associated with the IP address.

Related Commands

Command	Description
N/A.	N/A.

Platform Description N/A

3 IPv6 Commands

3.1 clear ipv6 neighbors

Use this command to clear the dynamic IPv6 neighbors.

clear ipv6 neighbors [**vrf** *vrf-name*] [**oob**] [*interface-id*]

Parameter Description

Parameter	Description
vrf-name	VRF name. All global IPv6 neighbors are cleared without specified VRF name by default.
oob	Clears the dynamic IPv6 neighbors discovered by neighbors on MGMT interface.
interface-id	Interface name. Clear the dynamically learned IPv6 neighbors on the specified interface.
vxlan	Clear the dynamically learned IPv6 neighbors on Overlay router interfaces.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide This command does not clear all the dynamic neighbors on authentication VLAN.
Note that the static neighbors will not be cleared.

Configuration Examples The following example clears the dynamic IPv6 neighbors.

```
Ruijie# clear ipv6 neighbors
```

The following example clears the dynamic IPv6 neighbors discovered by neighbors on MGMT interface.

```
Ruijie# clear ipv6 neighbors oob
```

The following example clears the dynamically learned IPv6 neighbors on gigabitEthernet 0/1.

```
Ruijie# clear ipv6 neighbors gigabitEthernet 0/1
```

The following example clears the dynamically learned IPv6 neighbors on Overlay router interfaces.

```
Ruijie# clear ipv6 neighbors vxlan
```

Related Commands

Command	Description
ipv6 neighbor	Configures the neighbor.
show ipv6 neighbors	Displays the neighbor information.

Platform Description N/A

3.2 ipv6 address

Use this command to configure an IPv6 address for a network interface. Use the **no** form of this command to restore the default setting.

ipv6 address ipv6-address/prefix-length

ipv6 address *ipv6-prefix/prefix-length* **eui-64**

ipv6 address *prefix-name sub-bits/prefix-length* [**eui-64**]

no ipv6 address

no ipv6 address *ipv6-address/prefix-length*

no ipv6 address *ipv6-prefix/prefix-length* **eui-64**

no ipv6 address *prefix-name sub-bits/prefix-length* [**eui-64**]

Parameter Description

Parameter	Description
iipv6-prefix	IPv6 address prefix in the format defined in RFC4291. The address shall be in hex; the fields in the address shall be separated by comma, and each field shall contain 16 bits.
ipv6-address	IPv6 address in the format defined in RFC4291. The address shall be in hex; the fields in the address shall be separated by comma, and each field shall contain 16 bits.
prefix-length	Length of the IPv6 prefix, the network address of the IPv6 address. Note: The prefix length range of the IPv6 address of the interface of S86 is 0 to 64 or 128 to 128.
prefix-name	The general prefix name. Use the specified general prefix to generate the interface address.
sub-bits	The value of the sub-prefix bit and the host bit generates the interface address combining with the general prefix. The value shall be in the format defined in the RFC4291.
eui-64	The generated IPV6 address consists of the address prefix and the 64 bit interface ID

Defaults N/A

Command Mode Interface configuration mode

Usage Guide When an IPv6 interface is created and the link status is UP, the system will automatically generate a local IP address for the interface.

The IPv6 address could also be generated using the general prefix. That is, the IPv6 address consists of the general prefix and the sub-prefix and the host bit. The general prefix could be configured using

the **ipv6 general-prefix** command or may be learned through the DHCPv6 agent PD (Prefix Discovery) function (please refer to the *DHCPv6 Configuration*). Use the *sub-bits/prefix-length* parameter of this command to configure the sub-prefix and the host bit.
If no deleted address is specified when using **no ipv6 address**, all the manually configured addresses will be deleted.
no ipv6 address *ipv6-prefix***/***prefix-length* **eui-64** can be used to delete the addresses configured with **ipv6 address** *ipv6-prefix***/***prefix-length* **eui-64**.

1.

Configuration Examples

```
Ruijie(config-if)# ipv6 address 2001:1::1/64
Ruijie(config-if)# no ipv6 address 2001:1::1/64
Ruijie(config-if)# ipv6 address 2002:1::1/64 eui-64
Ruijie(config-if)# no ipv6 address 2002:1::1/64 eui-64
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.3 ipv6 address autoconfig

Use this command to automatically configure an IPv6 stateless address for a network interface. Use the **no** form of this command to restore the default setting.
ipv6 address autoconfig [**default**]
no ipv6 address autoconfig

Parameter Description

Parameter	Description
default	(Optional) If this keyword is configured, a default routing is generated. Note that only one layer3 interface on the entire device is allowed to use the **default** keyword

Defaults N/A

Command Mode Interface configuration mode

Usage Guide The stateless automatic address configuration is that when receiving the RA (Route Advertisement) message, the device could use the prefix information of the RA message to automatically generate the EUI-64 interface address.
If the RA message contains the flag of the “other configurations”, the interface will obtain these “other configurations” through the DHCPv6. The “other configurations” usually means the IPv6 address of

the DNS server, the IPv6 address of the NTP server, etc.

Use the **no ipv6 address autoconfig** command to delete the IPv6 address.

Configuration Examples

```
Ruijie(config-if)# ipv6 address autoconfig default
Ruijie(config-if)# no ipv6 address autoconfig
```

Related Commands

Command	Description
ipv6 address ipv6-*prefix/prefix-length* [**eui-64**]	Configures the IPv6 address for the interface manually.

Platform Description N/A

3.4 IPv6 icmp error-interval

Use this command to set the frequency with which ICMPv6-oversize error packets are sent. Use the **no** form of this command to restore the default setting.

ipv6 icmp error-interval too-big *milliseconds* [*bucket-size*]

no ipv6 icmp error-interval too-big *milliseconds* [*bucket-size*]

Use this command to set the frequency with which other ICMPv6 error packets are sent. Use the **no** form of this command to restore the default setting.

ipv6 icmp error-interval *milliseconds* [*bucket-size*]

no ipv6 icmp error-interval *milliseconds* [*bucket-size*]

Parameter Description

Parameter	Description
milliseconds	Sets the refresh interval of the token bucket, in the range from 0 to 2147483647 in the unit of seconds. Setting the value to 0 indicates that the frequency with which ICMPv6 error packets are sent is not fixed.
bucket-size	Sets the number of tokens in the token bucket, in the range from 1 to 200.

Defaults The default *milliseconds* is 100 and *bucket-size* is 10.

Command Mode Global configuration mode

Usage Guide The token bucket algorithm is adopted to set the frequency with which ICMPv6 error packets are sent so as to prevent Denial of Service (DoS) attack,

If the forwarded IPv6 packet is greater than the egress IPv6 MTU in size, the router discards the IPv6 packet and sends the ICMPv6-oversize error packet to the source IPv6 address. This kind of ICMPv6 error packet is used for IPv6 path MTU discovery. If there are too many ICMPv6 error packets, the ICMPv6-oversize error packet may not be sent, causing IPv6 path MTU discovery failure. Therefore, it is recommended to set the frequency of ICMPv6-oversize error packet and other ICMPv6 error

packet respectively. Note that ICMPv6 redirect packet is not an ICMPv6 error packet and Ruijie sets the frequency of the ICMPv6 redirect packet the same as that of other ICMPv6 error packet.
For the timer is accurate to 10 milliseconds, it is recommended to set the refresh interval of the token bucket to an integer multiple of 10 milliseconds. If the refresh interval is not an integer multiple of 10 milliseconds, it is converted automatically. For example, the frequency of 1 per five milliseconds turns out to be 2 per 10 milliseconds; the frequency of 3 per 15 milliseconds is converted to 2 per 10 milliseconds.

Configuration Examples The following example sets the frequency with which ICMPv6-oversize error packets are sent to 100 per second.

```
Ruijie(config)# ipv6 icmp error-interval too-big 1000 100
```

The following example sets the frequency with which other ICMPv6 error packets are sent to 10 per second.

```
Ruijie(config)# ipv6 icmp error-interval 1000 10
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.5 ipv6 enable

Use this command to enable the IPv6 function on an interface. Use the **no** form of this command to restore the default setting.
ipv6 enable
no ipv6 enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide The IPv6 function of an interface can be enabled by configuring **ipv6 enable** or by configuring IPv6 address for the interface.

If an IPv6 address is configured for the interface, the IPv6 function will be enabled automatically on the interface and cannot be disabled with **no ipv6 enable**.

Configuration

```
Ruijie(config-if)# ipv6 enable
```

Examples

Related Commands	Command	Description
	show ipv6 interface	Displays the related information of an interface.

Platform Description N/A

3.6 Ipv6 gateway

Use this command to configure the default gateway IPv6 address on the management port.

ipv6 gateway *ipv6-address*

Parameter Description	Parameter	Description
	ipv6-address	Configures the default gateway IPv6 address.

Defaults N/A

Command Mode Interface configuration mode

Usage Guide The management port is MGMT in type and 0 in ID.

Configuration Examples The following example configures the default gateway IPv6 address on the management port.

```
Ruijie(config)# interface mgmt 0
Ruijie(config-int)# ipv6 gateway 2001:1::1
Ruijie(config-int)# exit
Ruijie(config)#
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

3.7 ipv6 general-prefix

Use this command to configure the IPv6 general prefix in the global configuration mode.

ipv6 general-prefix *prefix-name ipv6-prefix/prefix-length*

no ipv6 general-prefix *prefix-name ipv6-prefix/prefix-length*

Parameter	Parameter	Description

Description		
	prefix-name	The general prefix name.
	pv6-prefix	The network prefix value of the general-prefix following the format defined in RFC4291.
	prefix-length	The length of the general prefix.

Defaults N/A

Command Mode Global configuration mode.

Usage Guide It is convenient to number the network by using the general prefix, which defines a prefix so that many longer specified prefixes could refer to it. These specified prefixes are updated whenever the general prefix changes. If the network number changes, just modify the general prefix.
A general prefix could contain multiple prefixes.
These longer specified prefixes are usually used for the Ipv6 address configuration on the interface.

Configuration Examples The following example configures manually a general prefix as my-prefix.

```
Ruijie(config)# ipv6 general-prefix my-prefix 2001:1111:2222::/48
```

Related Commands	Command	Description
	ipv6 address prefix-name sub-bits/prefix-length	Configures the interface address using the general prefix.
	show ipv6 general-prefix	Displays the general prefix.

Platform Description N/A

3.8 ipv6 hop-limit

Use this command to configure the default hopcount to send unicast messages in the global configuration mode.
ipv6 hop-limit *value*
no ipv6 hop-limit

Parameter Description	Parameter	Description
	N/A	N/A

Defaults The default is 64.

Command Mode Global configuration mode.

Usage Guide This command takes effect for the unicast messages only, not for multicast messages.

Configuration Examples

```
Ruijie(config)# ipv6 hop-limit 100
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.9 ipv6 icmp source

Use this command to configure the source address of ICMPv6 packets. Use the **no** form of this command to restore the default setting.

ipv6 icmp source [vrf *vrf-name* **]** *ipv6-address*

no ipv6 icmp source

Parameter Description

Parameter	Description
vrf-name	Specifies the name of a configured VRF instance.
ipv6-address	Specifies the source address of ICMP packets.

Defaults By default, no source address is configured for ICMPv6 packets.

Command Mode Global configuration mode

Usage Guide In a network with a large number of IPv6 addresses configured, it is complex for receivers to recognize from which device ICMP packets are sent. To simplify the judgement, you can choose a specified address, like the address of the loopback interface, as the source address for ICMPv6 packets.

Configuration Examples The following example sets 1001::1 as the source address for ICMPv6 packets.

```
Ruijie(config)# ipv6 icmp souce 1001::1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.10 ipv6 mtu

Use this command to configure the MTU of IPv6 packets. Use the **no** form of this command to restore the default setting.

ipv6 mtu *bytes*
no ipv6 mtu

Parameter Description

Parameter	Description
bytes	MTU of IPv6 packets, in bytes. The value ranges from 1280 to 1500.

Defaults The default configuration is the same as the configuration of the **mtu** command.

Command Mode Interface configuration mode

Usage Guide If the size of an IPv6 packet exceeds the IPv6 MTU, the RGOS software segments the packet. For all devices in the same physical network segment, the IPv6 MTU of the interconnected interface must be the same.

Configuration Examples The following example sets the IPv6 MTU of the FastEthernet 0/1 interface to 1400 bytes.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ipv6 mtu 1400
```

Related Commands

Command	Description
mtu	Sets the MTU of an interface.

Platform Description This command cannot be used on Layer 2 devices.

3.11 ipv6 nd cache interface-limit

Use this command to set the maximum number of neighbors learned on the interface. Use the **no** form of this command to restore the default setting.
ipv6 nd cache interface-limit *value*
no ipv6 nd cache interface-limit

Parameter Description

Parameter	Description
value	Sets the maximum number of neighbors learned on the interface, including the static and dynamic neighbors, in the range from 0 to the number supported by the device. 0 indicates the number is not limited.

Defaults The default is 0.

Command Mode Interface configuration mode

Usage Guide This function can prevent neighbor entries generated by malicious neighbor attacks from consuming memory. *limit* must be no smaller than the number of neighbors learned on the interface. Otherwise, the configuration does not take effect.

Configuration Examples The following example sets the number of neighbors learned on the interface to 100.

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# ipv6 nd cache interface-limit 100
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.12 ipv6 nd dad attempts

Use this command to set the number of the NS packets to be continuously sent for IPv6 address collision check on the interface. Use the **no** form of this command to restore it to the default setting.
ipv6 nd dad attempts value
no ipv6 nd dad attempts *value*

Parameter Description

Parameter	Description
value	Number of the NS packets. If it is set to 0, it indicates that the IPv6 address collision check is disabled on the interface. The range is 0 to 600.

Defaults The default is 1.

Command Mode Interface configuration mode.

Usage Guide When the interface is configured with a new IPv6 address, the address collision shall be checked before the address is assigned to the interface, and the address shall be in the ”tentative” status. After the address collision check is completed, if no collision is detected, the address can be used normally; if collision is detected and the interface ID of the address is an EUI-64 ID, it indicates that the link-layer address is repeated, and the system will automatically shut down the interface (that is, to prohibit IPv6 operations on the interface). In this case, you shall modify and configure a new address manually, and restart address collision check for the **down/up** interface. Whenever the state of an interface changes from **down** to **up**, the address collision check function of the interface will be enabled.

Configuration Examples

```
Ruijie(config-if)# ipv6 nd dad attempts 3
```

Related Commands	Command	Description
	show ipv6 interface	Displays the interface information.

Platform Description N/A

3.13 ipv6 nd dad learning enable

Use this command to enable the interface to learn ND entries via DAD NS packets. Use the **no** form of this command to restore the default setting.

ipv6 nd dad learning enable

no ipv6 nd dad learning enable

Parameter Description	Parameter	Description
	N/A	N/A

Defaults By default, this feature is disabled on non-Super-VLAN interface. But on Super VLAN interfaces, this function is enabled by default.

Command Mode Interface configuration mode

Usage Guide After this command is run, when the interface receives DAD NS packets, ND entries with the status of Stale will be created.

Configuration Examples The following example enables the SVI 1 interface to learn ND entries via DAD NS packets.

```
Ruijie(config-if-VLAN 1)# ipv6 nd dad learning enable
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

3.14 ipv6 nd dad retry

Use this command to set the interval for address conflict detection. Use the **no** form of this command to restore the default setting.

ipv6 nd dad retry *value*

no ipv6 nd dad retry

Parameter Description	Parameter	Description
	value	Sets the interval for address conflict detection, 60

	seconds by default. Setting *value* to 0 indicates that the function is disabled.

Defaults N/A

Command Mode Global configuration mode

Usage Guide Before configuring a new IPv6 address for an interface, enable address conflict detection on the interface. If a conflict address is detected, the device does not receive the IPv6 packet destined to the conflict address. This command is used to perform conflict detection again when the interval expires. If there is no conflict, the address can be used.

Configuration Examples The following example sets the interval for address conflict detection to 10s.

```
Ruijie(config)# ipv6 nd dad retry 10
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.15 ipv6 nd l2port-down fast-delete

Use this command to delete ND entries when L2 ports get down. Use the **no** form of this command to restore the default setting.

ipv6 nd arp l2port-down fast-delete

no ipv6 nd arp l2port-down fast-delete

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, ND entries are not deleted when L2 ports get down.

Command Mode Interface configuration mode.

Usage Guide Run the **ipv6 nd l2port-down fast-delete** command on an SVI, so ND entries are removed as soon as L2 ports under this SVI get down. Without configuring this feature, ND entries are deleted only after their aging time is reached.

Configuration Examples The following example enables fast removal of ND entries when L2 ports get down.

```
Ruijie(config-if-VLAN 1)# ipv6 nd l2port-down fast-delete
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

3.16 ipv6 nd managed-config-flag

Use this command to set the “managed address configuration” flag bit of the RA message. Use the **no** form of this command to restore the default setting.

ipv6 nd managed-config-flag

no ipv6 nd managed-config-flag

Parameter Description	Parameter	Description
	N/A	N/A

Defaults N/A

Command Mode Interface configuration mode.

Usage Guide This flag determines whether the host that receives the RA message obtains an IP address through stateful auto configuration. If the flag is set, the host obtains an IP address through stateful auto configuration, otherwise it does not be used.

Configuration Examples

```
Ruijie(config-if)# ipv6 nd managed-config-flag
```

Related Commands	Command	Description
	show ipv6 interface	Displays the interface information.
	ipv6 nd other-config-flag	Sets the flag for obtaining all information except IP address through stateful auto configuration.

Platform Description N/A

3.17 ipv6 nd ns-interval

Use this command to set the interval for the interface to retransmitting NS (Neighbor Solicitation). Use the **no** form of this command to restore the default setting.

ipv6 nd ns-interval *milliseconds*

no ipv6 nd ns-interval

Parameter Description	Parameter	Description
	milliseconds	Interval for retransmitting NS in the range of 1000 to 429467295 milliseconds

Defaults The default value in RA is 0 (unspecified); the interval for retransmitting NS is 1000 milliseconds (1 second).

Command mode Interface configuration mode.

Usage Guide The configured value will be advertised through RA and will be used by the device itself. It is not recommended to set a too short interval.

Configuration Examples

```
Ruijie(conifig-if)# ipv6 nd ns-interval 2000
```

Related Commands	Command	Description
	show ipv6 interface	Displays the interface information.

Platform Description N/A

3.18 ipv6 nd other-config-flag

Use this command to set “other stateful configuration” flag bit of the RA message. Use the **no** form of this command to delete the flag bit.

ipv6 nd other-config-flag

no ipv6 nd other-config-flag

Parameter Description	Parameter	Description
	N/A	N/A

Defaults The flag bit is not set by default.

Command mode Interface configuration mode.

Usage Guide With this flag bit set, the flag bit of the RA message sent by the device is set. After receiving this flag bit, the host uses the dhcpv6 to acquire the information excluding the IPv6 address for the purpose of automatic configuration. When the **managed address configuration** is set, the default **other stateful configuration** is also set

Configuration Examples

```
Ruijie(config-if)# ipv6 nd other-config-flag
```

Related Commands

Command	Description
show ipv6 interface	Displays the interface information.

Platform Description N/A

3.19 ipv6 nd port-down fast-delete enable

Use this command to fast delete ND entries when the corresponding L2 ports get down. Use the **no** form of this command to restore the default setting.

ipv6 nd port-down fast-delete enable

no ipv6 nd port-down fast-delete

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, this feature is disabled.

Command Mode Global configuration mode.

Usage Guide After the **ipv6 nd port-down fast-delete enable** command is run, dynamic ND entries are removed when their corresponding L2 ports get down.

Configuration Examples The following example enables fast removal of ND entries when the corresponding L2 ports get down.

```
Ruijie(config)# ipv6 nd port-down fast-delete enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.20 ipv6 nd prefix

Use this command to configure the address prefix included in the RA. Use the **no** form of this command to delete the set prefix or restore the default setting.

ipv6 nd prefix { *ipv6-prefix*/*prefix-length* | **default** } [[*valid-lifetime preferred-lifetime*] | [**at** *valid-date preferred-date*] | [**infinite** | *preferred-lifetime*]] [**no-advertise**] | [[**off-link**] [**no-autoconfig**]]

no ipv6 nd prefix { *ipv6-prefix/prefix-length* | **default** } [[**off-link**] [**no-autoconfig**] | [**no-advertise**]]

Parameter Description

Parameter	Description
ipv6-prefix	IPv6 network ID following the format defined in RFC4291
prefix-length	Length of the IPv6 prefix. “/” shall be added in front of the prefix
valid-lifetime	Valid lifetime of the RA prefix received by the host
preferred-lifetime	Preferred lifetime of the RA prefix received by the host
at valid-date preferred-date	Sets the dead line for the valid lifetime and that of the preferred lifetime, in day, month, year, hour, minute.
infinite	Indicates that the prefix is always valid.
default	Sets the default prefix.
no-advertise	The prefix will not be advertised by the device.
off-link	When the host sends an IPv6 packet, if the prefix of the destination address matches the set prefix, it is considered that the destination is on-link and is directly reachable. If this option is set, it indicates that the prefix is not used for on-link judgment.
no-autoconfig	Indicates that the RA prefix received by the host cannot be used for auto address configuration.
preference	Indicates the priority of routings, which could be high, medium or low.
proxy	Indicates prefix-based ND proxy.

Defaults

By default, the advertised prefix is the one set with **ipv6 address** on the interface. The default parameters of the prefix configured in the RA are as follows:
valid-lifetime: 2592000s (30 days)
preferred-lifetime: 604800s (7 days),
preference: medium,
proxy: disabled
The prefix is advertised and is used for on-link judgment and auto address configuration.

Command Mode

Interface configuration mode.

Usage Guide

This command can be used to configure the parameters of each prefix, including whether to advertise the prefix. By default, the prefix advertised in RA is the one set with **ipv6 address** on the interface. To add other prefixes, use this command.

ipv6 nd prefix default

Set the default parameters to be used by the interface. If no parameter is specified for an added prefix, the parameters set with **ipv6 nd prefix default** will be used. Note that after a parameter is specified for the prefix, the default configuration will not be used. That is to say, the configuration of the prefix cannot be modified with **ipv6 nd prefix default**; only the prefix that uses all the default configurations can be modified with this command.

at *valid-date preferred-date*

The valid lifetime of a prefix can be specified in two ways. One way is to specify a fixed time for each

prefix in the RA; the other way is to specify the end time (in this mode, the valid lifetime of the prefix sent in RA will be gradually reduced until the end time is 0).

Configuration Examples The following example adds a prefix for SVI 1.

```
Ruijie(config)# interface vlan 1
Ruijie(conifig-if)# ipv6 nd prefix 2001::/64 infinite 2592000
```

The following example sets the default prefix parameters for SVI 1 (they cannot be used for auto address configuration):

```
Ruijie(config)# interface vlan 1

Ruijie(config-if)# ipv6 prefix default no-autoconfig
```

If no parameter is specified, the default parameters will be used, and the prefix cannot be used for auto address configuration.

Related Commands

Command	Description
show ipv6 interface	Displays the RA information of an interface.

Platform Description N/A

3.21 ipv6 nd packet rate-statistics interval

Use this command to configure the interval between two samplings of ND packets for rate statistics. Use the **no** form of this command to restore the default setting.

ipv6 nd packet rate-statistics interval *seconds*

no ipv6 nd packet rate-statistics interval

Parameter Description

Parameter	Description
seconds	Specifies the interval between two samplings of ND packets in the unit of second. The range is from 60 to 86,400.

Defaults By default, statistics of ND packets is disabled.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the interval between two samplings to 60s.

```
Ruijie(config)# ipv6 nd packet rate-statiscs interval 60
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

3.22 ipv6 nd ra dns server

Use this command to suppress RDNSS in the RA message. Use the **no** form of this command to enable RDNSS in the RA message.

ipv6 nd ra dns server suppress

no ipv6 nd ra dns server suppress

Use this command to configure the IP address of a recursive DNS server. Use the **no** form of this command to delete the IP address.

ipv6 nd ra dns server *ipv6-address* {*valid-lifetime* | **infinite**} **sequence** *number*

no ipv6 nd ra dns server *ipv6-address* {*valid-lifetime* | **infinite**} **sequence** *number*

Parameter Description

Parameter	Description
ipv6-address	Configures an IPv6 address in conformity to RFC4291. ":" is used to separate domains. And these 16-bit domains are in hexadecimal format.
suppress	Suppresses the RDNSS option in the RA message. By default, RDNSS is suppressed.
valid-lifetime	Configures the lifetime of RDNSS in the RA message once the option is received. The range is from 0 to 4294967295. The value "0" indicates RDNSS is not available.
infinite	Indicates the RDNSS option is valid forever.
number	Configures the sequence number of the same RDNSS option in RA messages.

Defaults By default, the RDNSS option in RA is suppressed.

Command Mode Interface configuration mode.

Usage Guide Use the **ipv6 nd ra dns server** *ipv6-address* {*valid-lifetime* | **infinite**} **sequence** *number* command to configure the RDNSS option and its parameters. Under one interface, one sequence can be configured in only one option, and one IPv6 address can be matched with only one sequence. After configured, RDNSS options are notified via RA messages. Then, the options are sorted in accordance with sequence number.

Configuration Examples The following example enables RDNSS on the interface VLAN1 and configures the option.

```
Ruijie(config)#interface vlan 1
Ruijie(config-if-VLAN 1)# no ipv6 nd rad ns server suppress
Ruijie(config-if-VLAN 1)# ipv6 nd ra dns server 2018::1 infinite sequence 0
Ruijie(config-if-VLAN 1)# ipv6 nd ra dns server 2020::1 1000 sequence 1
```

The following example removes a prefix on the interface VLAN1.

```
Ruijie(config)# interface vlan 1
Ruijie(config-if-VLAN 1)# no ipv6 nd ra dns server 2018::1 infinite sequence 0
Ruijie(config-if-VLAN 1)# no ipv6 nd ra dns server 2020::1 1000 sequence 1
```

Related Commands N/A

Platform Description N/A

3.23 ipv6 nd ra dns search-list

Use this command to suppress DNSSL in the RA message. Use the **no** form of this command to enable DNSSL in the RA message.
ipv6 nd ra dns search-list suppress
no ipv6 nd ra dns search-list suppress

Use this command to configure the DNS suffix contained in the RA message. Use the **no** form of this command to delete the suffix.
ipv6 nd ra dns search-list *ipv6-domain-name* {*valid-lifetime* | **infinite**} **sequence** *number*
no ipv6 nd ra-dns dnssl *ipv6-domain-name* ***sequence*** *number*

Parameter Description

Parameter	Description
ipv6-address	Configures a DNS suffix with no more than 64 bytes, such as ruijie.com.cn.
suppress	Suppresses the DNSSL option in the RA message. By default, DNSSL is suppressed.
valid-lifetime	Configures the lifetime of DNSSL in the RA message once the option is received. The range is from 0 to 4294967295. The default value is 1,800 seconds. The value “0” indicates DNSSL is not available.
infinite	Indicates the DNSSL option is valid forever.
number	Configures the sequence number of the same DNSSL option in RA messages.

Defaults By default, the DNSSL option in RA is suppressed.

Command Mode Interface configuration mode.

Usage Guide Use the **ipv6 nd ra dns search-list** *ipv6-domain-name* {*valid-lifetime* | **infinite**} **sequence** *number* command to configure the DNSSL option and its parameters. The same sequence number indicates the same DNSSL option. Up to 255 DNS suffixes can be configured for one sequence number. To remove DNS suffixes, their corresponding sequence numbers should be provided.

For DNSSL of the same sequence number, it is recommended to configure one same valid lifetime. Otherwise, the latest-configured lifetime takes effect for all the options.

Configuration Examples The following example enables DNSSL on the interface VLAN1 and configures the option.

```
Ruijie(config)#interface vlan 1
Ruijie(config-if-VLAN 1)# no ipv6 nd rad ns search-list suppress
Ruijie(config-if-VLAN 1)# ipv6 nd ra dns search-list rgosm.cn infinite sequence 0
Ruijie(config-if-VLAN 1)# ipv6 nd ra dns search-list ruijie.net 2018 sequence 1
```

The following example removes the DNSSL option on the interface VLAN1.

```
Ruijie(config)# interface vlan 1
Ruijie(config-if-VLAN 1)# no ipv6 nd ra dns search-list rgosm.cn infinite sequence 0
Ruijie(config-if-VLAN 1)# no ipv6 nd ra dns search-list ruijie.net 2018 sequence 1
```

Related Commands N/A

Platform Description N/A

3.24 ipv6 nd ra-hoplimit

Use this command to set the hopcount of the RA message. Use the **no** form of this command to restore the default setting.

ipv6 nd ra-hoplimit *value*

no ipv6 nd ra-hoplimit

Parameter Description

Parameter	Description
value	Hopcount

Defaults The default is 64.

Command Mode Interface configuration mode.

Usage Guide This command is used to set the hopcount of the RA message.

Configuration Examples

```
Ruijie(config -if)# ipv6 nd ra-hoplimit 110
```

Related Commands

Command	Description
show ipv6 interface	Displays the interface information.
ipv6 nd ra-lifetime	Sets the lifetime of the device.
ipv6 nd ra-interval	Sets the interval of sending the RA message.
ipv6 nd ra-mtu	Sets the MTU of the RA message.

Platform Description N/A

3.25 ipv6 nd ra-interval

Use this command to set the interval of sending the RA. Use the **no** form of this command to restore the default setting.

ipv6 nd ra-interval { *seconds* | **min-max** *min_value max_value* }

no ipv6 nd ra-interva l

Parameter Description

Parameter	Description
seconds	Interval of sending the RA message in seconds, 3-1800s.
min-max	Maximum and minimum interval sending the RA message in seconds
min_value	Minimum interval sending the RA message in seconds
max_value	Maximum interval sending the RA message in seconds

Defaults 200s. The actual interval of sending the RA message will be fluctuated 20% based on 200s.

Command Mode Interface configuration mode.

Usage Guide If the device serves as the default device, the set interval shall not be longer than the lifetime of the device. Besides, to ensure other devices along the link occupies network bandwidth while sending the RA message, the actual interval for sending the RA message will be fluctuated 20% based on the set value.

If the key word **min-max** is specified, the actual interval for sending the packet will be chosen

between the range of minimum value and maximum value.

Configuration Examples

```
Ruijie(conifig-if)# ipv6 nd ra-interval 110
Ruijie(config-if)# ipv6 nd ra-interval min-max 110 120
```

Related Commands

Command	Description
show ipv6 interface	Displays the interface information.
ipv6 nd ra-lifetime	Sets the lifetime of the device.
ipv6 nd ra-hoplimit	Sets the hopfcount of the RA message.
ipv6 nd ra-mtu	Sets the MTU of the RA message.

Platform Description N/A

3.26 ipv6 nd ra-lifetime

Use this command to set the device lifetime of the RA sent on the interface. Use the **no** form of this command to restore the default setting.

ipv6 nd ra-lifetime *seconds*

no ipv6 nd ra-lifetime

Parameter Description

Parameter	Description
seconds	Default life time of the device on the interface, in the range from 0 to 9000 in the unit of seconds.

Defaults The default is 1800.

Command Mode Interface configuration mode.

Usage Guide The router lifetime field is available in each RA. It specifies the time during which the hosts along the link of the interface can select the device as the default device. If the value is set to 0, the device will not serve as the default device any longer. If it is not set to 0, it shall be larger than or equal to the interval of sending the RA (ra-interval)

Configuration Examples

```
Ruijie(conifig-if)# ipv6 nd ra-lifetime 2000
```

Related Commands

Command	Description
show ipv6 interface	Displays the interface information.
ipv6 nd ra-interval	Sets the interval of sending the RA.
ipv6 nd ra-hoplimit	Sets the hopcount of the RA.
ipv6 nd ra-mtu	Sets the MTU of the RA.

Platform Description N/A

3.27 ipv6 nd ra-mtu

Use this command to set the MTU of the RA message. Use the **no** form of this command to restore the default setting.

ipv6 nd ra-mtu *value*

no ipv6 nd ra-mtu

Parameter Description

Parameter	Description
value	MTU value, in the range from 0 to 4294967295.

Defaults IPv6 MTU value of the network interface.

Command Mode Interface configuration mode.

Usage Guide If it is specified as 0, the RA will not have the MTU option

Configuration Examples

```
Ruijie(config -if)# ipv6 nd ra-mtu 1400
```

Related Commands

Command	Description
show ipv6 interface	Displays the interface information.
ipv6 nd ra-lifetime	Sets the lifetime of the device.
ipv6 nd ra-interval	Sets the interval of sending the RA message.
ipv6 nd ra-hoplimit	Sets the hopcount of the RA message.

Platform Description N/A

3.28 ipv6 nd ra-url

Use this command to configure the URL of RA messages sent from the interface. Use the **no** form of this command to restore the default setting.

ipv6 nd ra-url [*url*]

no ipv6 nd ra-url

Parameter Description

Parameter	Description
url	Specifies the URL of RA messages, which contains up to 255 bytes.

Defaults By default, no URL is configured for RA messages.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the URL of RA messages to ruijie.com.

```
Ruijie(config -if)# ipv6 nd ra-url ruijie.com
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.29 ipv6 nd ra-url type

Use this command to configure the URL option code for RA messages. Use the **no** form of this command to restore the default setting.

ipv6 nd ra-url *type*

no ipv6 nd ra-url

Parameter Description

Parameter	Description
type	Specifies the option code, whose value cannot exceed 254. The number adopted by RFCs cannot be used, such as 140.

Defaults By default, no URL is configured for RA messages.

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the URL option code to 234.

```
Ruijie(config)# ipv6 nd ra-url type 234
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.30 ipv6 nd reachable-time

Use this command to set the reachable time after the interface checks the reachability of the neighbor dynamically learned through NDP. Use the **no** form of this command to restore the default setting.

ipv6 nd reachable-time *milliseconds*

no ipv6 nd reachable-time

Parameter Description

Parameter	Description
milliseconds	Reachable time for the neighbor in the range from 0 to 3600000 in the unit of milliseconds.

Defaults The default value in RA is 0 (unspecified); the reachable time for the neighbor is 30000 milliseconds (30 seconds) when the device discovers the neighbor.

Command Mode Interface configuration mode.

Usage Guide The device checks the unreachable neighbor through the set time. A shorter time means that the device can check the neighbor failure more quickly, but more network bandwidth and device resource will be occupied. Therefore, it is not recommended to set a too short reachable time.

The configured value will be advertised through RA and will be used by the device itself. If the value is set to 0, it indicates that the time is not specified, that is, the default value is used.

According to RFC4861, the actual time to reach neighbor is not consistent with the configured value, ranging from 0.5*configured value to 1.5*configured value.

Configuration Examples

```
Ruijie(config-if)# ipv6 nd reachable-time 1000000
```

Related Commands

Command	Description
show ipv6 interface	Displays the interface information.

Platform Description N/A

3.31 ipv6 nd remote inactive

Use this command to disable generating of host routes after EVPN synchronizes ND entries to Overlay router interfaces. Use the **no** form of this command to enable this function.

ipv6 nd remote inactive

no ipv6 nd remote inactive

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Default Level 2

Usage Guide N/A

Configuration Examples The following example enables generating of host routes after EVPN synchronizes ND entries to Overlay router interfaces.

```
Ruijie(config-if-OverlayRouter 1)#no ipv6 nd remote inactive
```

Verification Run the **show running-config** command to display configurations.

3.32 ipv6 nd state-time

Use this command to set the period for the neighbor to maintain the state. Use the **no** form of this command to restore the default setting.

ipv6 nd stale-time *seconds*

no ipv6 nd stale-time

Parameter Description

Parameter	Description
Seconds	Sets the period for the neighbor to maintain the state, in the range from 0 to 86400 in the unit of seconds.

Defaults The default is 3600.

Command Mode Global configuration mode

Usage Guide This command is used to set the period for the neighbor to maintain the state. After the period expires, neighbor unreachability detection is performed. The shorter the period, the faster the neighbor is found unreachable. On the other hand, more network bandwidth and device resources are consumed. Therefore, it is recommended to set a value not too small.

Configuration Examples The following example sets the period to 600 seconds for the neighbor to maintain the state.

```
Ruijie(config)# ipv6 nd stale-time 600
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.33 ipv6 nd suppress-auth-vlan-ns

Use this command to disable the SVI interface from sending the NS packet to the authentication VLAN. Use the **no** form of this command to disable this function.

ipv6 nd suppress-auth-vlan-ns

no ipv6 nd suppress-auth-vlan-ns

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode Interface configuration mode

Usage Guide This command is supported on the SVI interface in gateway authentication mode.

Configuration Examples The following example enables VLAN 2 to send the NS packet to the authentication VLAN.

```
Ruijie(config-if-VLAN 2)# no ipv6 nd suppress-auth-vlan-ns
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.34 ipv6 nd suppress-ra

Use this command to disable the interface from sending the RA message. Use the **no** form of this command to enable the function.

ipv6 nd suppress-ra

no ipv6 nd suppress-ra

Parameter Description

Parameter	Description
N/A	N/A

Defaults The **ipv6 nd suppress-ra** command is enabled by default.

Command Mode Interface configuration mode.

Usage Guide This command suppresses the sending of the RA message on an interface.

Configuration Examples

```
Ruijie(config-if)# ipv6 nd suppress-ra
```

Related Commands

Command	Description
show ipv6 interface	Displays the interface information.

Platform Description N/A

3.35 ipv6 nd unresolved

Use this command to set the maximum number of the unresolved neighbor table entries. Use the **no** form of this command to restore the default setting.

ipv6 nd unresolved *number*

no ipv6 nd unresolved

Parameter Description

Parameter	Description
number	Sets the maximum number of the unresolved neighbor table entries, in the range from 1 to the neighbor table size supported by the device.

Defaults The default is 0. (The maximum number is the neighbor table size supported by the device)

Command Mode Global configuration mode

Usage Guide This command is used to prevent unresolved ND table entries generated by malicious scan attacks from consuming table entry resources,

Configuration Examples The following example sets the maximum number of the unresolved neighbor table entries to 200.

```
Ruijie(config)# ipv6 nd unresolved 200
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.36 ipv6 neighbor

Use this command to configure a static neighbor. Use the **no** form of this command to delete a static neighbor.

ipv6 neighbor *ipv6-address interface-id hardware-address*

no ipv6 neighbor *ipv6-address interface-id*

Parameter Description

Parameter	Description
ipv6-address	The neighbor IPv6 address, in the form as defined in RFC4291.
interface-id	Specifies the network interface where the neighbor is (including Router Port, L3 AP port and SVI interface).
hardware-address	The 48-bit MAC address, a dotted triple of four-digit hexadecimal numbers.

Defaults No static neighbor is configured by default.

Command Mode Global configuration mode

Usage Guide This command can only be configured on the interface enabled with IPv6 protocol, similar to the ARP command.

If the neighbor to be configured has been learned through Neighbor Discovery Protocol (NDP) and stored in the NDP neighbor table, the dynamic neighbor turns to be static. If the static neighbor is valid, it is always reachable. An invalid static neighbor refers to the neighbor whose IPv6 address is not valid (not in the IPv6 network segment configured for the interface or interface address conflict). The packet is not forwarded to the MAC address as specified by the invalid static neighbor. The invalid static neighbor is in inactive state. Use the show ipv6 neighbor static command to display the state of the static neighbor.

Use the **clear ipv6 neighbors** command to clear all neighbors learned dynamically through NDP.

Configuration Examples The following example configures a static neighbor on SVI 1.

```
Ruijie(config)# ipv6 neighbor 2001::1 vlan 1 00d0.f811.1111
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.37 ipv6 ns-linklocal-src

Use this command to set the local address of the link as the source IP address to send neighbor

requests. Use the **no** form of this command to use the global IP address w as the source address to send neighbor requests.

ipv6 ns-linklocal-src

no ipv6 ns-linklocal-src

Parameter Description	**Parameter**	**Description**
	N/A	N/A

Defaults The local address of the link is always used as the source address to send neighbor requests.

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples

```
Ruijie(config)# no ipv6 ns-linklocal-src
```

Related Commands	**Command**	**Description**
	N/A	N/A

Platform Description N/A

3.38 ipv6 redirects

Use this command to control whether to send ICMPv6 redirect message when the switch receives and forwards an IPv6 packet through an interface. Use the **no** form of this command to restore the default setting.

ipv6 redirects

no ipv6 redirects

Parameter Description	**Parameter**	**Description**
	N/A	N/A

Defaults This function is enabled by default.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration The following example enables ICMPv6 redirection on interface GigabitEthernet 0/1.

Examples

```
Ruijie(config-if-GigabitEthernet 0/1)# ipv6 redirects
```

Related Commands

Command	Description
show ipv6 interface	Displays the interface information.

Platform Description N/A

3.39 ipv6 source-route

Use this command to forward the IPv6 packet with route header. Use the **no** form of this command to restore the default setting.

ipv6 source-route

no ipv6 source-route

Parameter Description

Parameter	Description
N/A	N/A

Defaults The **ipv6 source-route** command is disabled by default.

Command Mode Global configuration mode.

Usage Guide Because of the potential security of the header of type 0 route, it's easy for the device to suffer from the denial service attack. Therefore, forwarding the IPv6 packet with route header is disabled by default. However, the IPv6 packet of route header with type 0 that destined to the local machine is processed.

Configuration Examples

```
Ruijie(config)# no ipv6 source-route
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.40 show ipv6 address

Use this command to display the IPv6 addresses.

show ipv6 address [*interface-name*]

Parameter

Parameter	Description

Description	*interface-name*	Interface name

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays all IPv6 address configured on the device.

```
Ruijie#show ipv6 address
Global unicast address limit: 1024, Global unicast address count: 3
Tentative address count: 2,Duplicate address count: 1
Preferred address count: 3,Deprecated address count: 0
Gi 0/5
  FE80::1/64                                    Preferred
    Preferred lifetime: INFINITE, Valid lifetime: INFINITE
  1000::1/64                                    Duplicate
    Preferred lifetime: INFINITE, Valid lifetime: INFINITE
Gi 0/6
  FE80::1/64                                    Tentative
    Preferred lifetime: INFINITE, Valid lifetime: INFINITE
  1111:1111:1111:1111:1111:1111:1111:1111/64   Tentative
    Preferred lifetime: INFINITE, Valid lifetime: INFINITE
Gi 0/7
  FE80::1/64                                    Preferred
    Preferred lifetime: INFINITE, Valid lifetime: INFINITE
  2000:1111:1111:1111:1111:1111:1111:1111/64   Preferred
    Preferred lifetime: INFINITE, Valid lifetime: INFINITE
```

The following example displays the IPv6 address configured on the GigabitEthernet 0/1.

```
Ruijie#show ipv6 address Gi 0/5
Global unicast address count: 3
Tentative address count: 0,Duplicate address count: 1
Preferred address count: 1,Deprecated address count: 0
FE80::1/64                                      Preferred
  Preferred lifetime: INFINITE, Valid lifetime: INFINITE
1000::1/64                                      Duplicate
  Preferred lifetime: INFINITE, Valid lifetime: INFINITE
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

3.41 show ipv6 general-prefix

Use this command to display the information of the general prefix.

show ipv6 general-prefix

Parameter Description	Parameter	Description
	N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide Use this command to display the information of the general prefix including the manually configured and learned from the DHCPv6 agent.

Configuration Examples

```
The following example displays the information of the general prefix.Ruijie#
show ipv6 general-prefix
There is 1 general prefix.
IPv6 general prefix my-prefix, acquired via Manual configuration
 2001:1111:2222::/48
 2001:1111:3333::/48
```

Related Commands	Command	Description
	ipv6 general-prefix	Configures the general prefix.

Platform Description N/A

3.42 show ipv6 interface

Use this command to display the IPv6 interface information.

show ipv6 interface [*interface-id*] [**ra-info**]] [*brief* [interface-id]]

Parameter Description	Parameter	Description
	interface-id	Interface (including Ethernet interface, aggregate port, or SVI)
	ra-info	Displays the RA information of the interface.
	brief	Displays the brief information of the interface (interface status and address information).

Defaults N/A

Command Privileged EXEC mode.

Mode

Usage Guide Use this command to display the address configuration, ND configuration and other information of an IPv6 interface.

Configuration Examples The following example displays the information of the IPv6 interface.

```
Ruijie# show ipv6 interface vlan 1
Interface vlan 1 is Up, ifindex: 2001
address(es):
Mac Address: 00:00:00:00:00:01
INET6: fe80::200:ff:fe00:1 , subnet is fe80::/64
Joined group address(es):
ff01:1::1
ff02:1::1
ff02:1::2
ff02:1::1:ff00:1
INET6: 2001::1 , subnet is 2001::/64 [TENTATIVE]
Joined group address(es):
ff01:1::1
ff02:1::1
ff02:1::2
ff02:1::1:ff00:1
MTU is 1500 bytes
ICMP error messages limited to one every 10 milliseconds
ICMP redirects are enabled
ND DAD is enabled, number of DAD attempts: 1
ND reachable time is 30000 milliseconds
ND advertised reachable time is 0 milliseconds
ND retransmit interval is 1000 milliseconds
ND advertised retransmit interval is 0 milliseconds
ND router advertisements are sent every 200 seconds<240--160>
ND device advertisements live for 1800 seconds
```

The following line is included in the above information: 2001::1, subnet is 2001::/64 [**TENTATIVE**]. The flag bit in the [ ] following the INET6 address is explained as follows:

Flag	Meaning
ANYCAST	Indicate that the address is an anycast address.
TENTATIVE	Indicate that the DAD is underway. The address is a tentative before the DAD is completed.
DUPLICATED	Indicate that a duplicate address exists.
DEPRECATED	Indicate that the preferred lifetime of the address expires.
NODAD	Indicate that no DAD is implemented for the address.

AUTOIFID	Indicate that the interface ID of the address is automatically generated by the system, which is usually an EUI-64 ID.

The following example displays the RA information of the IPv6 interface.

```
Ruijie# show ipv6 interface vlan 1 ra-info
vlan 1: DOWN
RA timer is stopped
waits: 0, initcount: 3
statistics: RA(out/in/inconsistent): 4/0/0, RS(input): 0
Link-layer address: 00:00:00:00:00:01
Physical MTU: 1500
ND device advertisements live for 1800 seconds
ND device advertisements are sent every 200 seconds<240--160>
Flags: !M!O, Adv MTU: 1500
ND advertised reachable time is 0 milliseconds
ND advertised retransmit time is 0 milliseconds
ND advertised CurHopLimit is 64
Prefixes: (total: 1)
fec0:1:1:1::/64(Def,Auto,vltime: 2592000, pltime: 604800, flags: LA)
```

Description of the fields in **ra-info**:

Field	Meaning
RA timer is stopped (on)	Indicate whether the RA timer is started.
waits	Indicate that the RS is received but the number of the responses is not available.
initcount	Indicate the number of the RAs when the RA timer is restarted.
RA(out/in/ inconsistent)	out: Indicate the number of the RAs that are sent. In: Indicate the number of the RAs that are received. inconsistent: Indicate the number of the received RAs in which the parameters are different from those contained in the RAs advertised by the device.
RS(input)	Indicate the number of the RSs that are received.
Link-layer address	Link-layer address of the interface.
Physical MTU	Link MTU of the interface.
!M | M	!M indicates the managed-config-flag bit in the RA is not set. M: Conversely
!O | O	!O indicates the other-config-flag bit in the RA is not set. O: Conversely

Description of the fields of the prefix list in **ra-info**:

Field	Meaning
total	The number of the prefixes of the interface.
fec0:1:1:1::/64	A specific prefix.
Def	Indicate that the interfaces use the default prefix.
Auto | CFG	Auto: Indicate the prefix is automatically generated after the interface is configured with the corresponding IPv6 address. CFG: Indicate that the prefix is manually configured.
!Adv	Indicate that the prefix will not be advertised.
vltime	Valid lifetime of the prefix, measured in seconds.
pltime	Preferred lifetime of the prefix, measured in seconds.
L | !L	L: Indicate that the on-link in the prefix is set. !L: Indicate that the on-link in the prefix is not set.
A | !A	A: Indicate that the auto-configure in the prefix is set. !A: It indicates that the auto-configure in the prefix is not set.

The following example displays the brief information of the IPv6 interface.

```
Ruijie#show ipv6 interface brief

GigabitEthernet 0/1          [down/down]
       2222::2
       FE80::1614:4BFF:FE5C:ED3A
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.43 show ipv6 nd

Use this command to display the statistics of IPv6 ND packets.

show ipv6 nd [**interface** *interface-name*] **statistics**

Parameter Description

Parameter	Description
interface-name	Specifies the interface name whose statistics of IPv6 ND packets is displayed.
statistics	Displays the statistics of IPv6 ND packets.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the statistics of IPv6 ND packets on the SVI 1 interface:

```
Ruijie# show ipv6 nd interface vlan 1 statistics
interface VLAN 1 is Up, ifindex: 4097, vrf_id 0
 ipv6 interface packet statics:
 stat-type              Router Solicitations           Router advertisements
Neighbor solicitations         Neighbor advertisements
 Received                       0                                          0
0                           0
 Send                             0                                        0
1                           0
 Rate(receive,  pps)           0                                          0
0                           0
 Rate(send,  pps)                0                                       0
0                           0
 Interval time: 60s
```

Field	Meaning
stat-type	Statistics types, including types of RS/RA/NS/NA packets.
Received	Statistics of received packets.
Send	Statistics of sent packets.
Rate	Rates of receiving or sending packets in the unit of PPS.
Interval time	Interval between two samplings of ND packets.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.44 show ipv6 neighbors

Use this command to display the IPv6 neighbors.

show ipv6 neighbors [**vrf** *vrf-name*] [**verbose**] [*interface-id*] [*ipv6-address*]

show ipv6 neighbors static

Parameter Description

Parameter	Description
verbose	Displays the neighbor details.

static	Displays the validity status of static neighbors.
vrf-name	VRF name
interface-id	Displays the neighbors of the specified interface.
ipv6-addres	Displays the neighbors of the specified IPv6 address.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide

Configuration Examples

```
The following example displays the neighbors on the SVI 1 interface:Ruijie# show
ipv6 neighbors vlan 1
IPv6 Address Linklayer Addr Interface
fa::1 00d0.0000.0002 vlan 1
fe80::200:ff:fe00:2 00d0.0000.0002 vlan 1
Show the neighbor details:
Ruijie# show ipv6 neighbors verbose
IPv6 Address Linklayer Addr Interface
2001::1 00d0.f800.0001 vlan 1
 State: Reach/H Age: - asked: 0
fe80::200:ff:fe00:1 00d0.f800.0001 vlan 1
 State: Reach/H Age: - asked: 0
```

Field	Meaning
IPv6 Address	IPv6 address of the Neighbor
Linklayer Addr	Link address, namely, MAC address. If it is not available, incomplete is displayed.
Interface	Interface the neighbor locates.
State	State of the neighbor: state/H(R) The values of STATE are as below: INCMP (Incomplete): The address resolution of the neighbor is underway, the NS is sent, but the NA is not received. REACH (Reachable): The switch is connected with the neighbor. In this state, the switch takes no additional action when sending packets to the neighbor. STALE: The reachable time of the neighbor expires. In this state, the switch takes no additional action; it only starts NUD (Neighbor Unreachability Detection) after a packet is sent to the neighbor. DELAY: A packet is sent to the neighbor in STALE state. If the STALE state changes to DELAY, DELAY will be changed to PROBE if no neighbor reachability notification

	is received within DELAY_FIRST_PROBE_TIME seconds (5s), the NS will be sent to the neighbor to start NUD. PROBE: The NUD is started to check the reachability of the neighbor. The NS packets are sent to the neighbor at the interval of RetransTimer milliseconds until the response from the neighbor is received or the number of the sent NSs hits MAX_UNICAST_SOLICIT(3). ?: Unknown state. /R—indicate the neighbor is considered as a device /H: The neighbor is a host.
Age	The reachable time of the neighbor. '-' indicates that the neighbor is always reachable. Note that the reachability of a static neighbor depends on the actual situation. 'expired' indicates that the lifetime of the neighbor expires, and the neighbor is waits for the triggering of NUD.
Asked	The number of the NSs that are sent to the neighbor for the resolution of the link address of the neighbor.

Related Commands

Command	Description
ipv6 neighbor	Configures a neighbor.

Platform Description N/A

3.45 show ipv6 neighbors statistics

Use the following commands to display the statistics of one IPv6 neighbors.

show ipv6 neighbors [**vrf** *vrf-name*] **statistics**

Use the following command to show the statistics of all IPv6 neighbors.

show ipv6 neighbors statistics all

Parameter Description

Parameter	Description
vrf-name	VRF name

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the statistics of the global neighbors.

```
Ruijie#show ipv6 neighbors statistics
Memory: 1000 bytes
Entries: 10
  Static: 1,Dynamic: 9,Local: 0
  Incomplete:1, Reachable:5, Stale:1, Delay:1, Probe:1

Ruijie#show ipv6 neighbors statistics all
IPv6 neighbor table count: 2
Static neighbor count: 4(2 active, 2 inactive)
Total
  Memory: 2000 bytes
  Entries: 20
    Static: 2,Dynamic: 18,Local: 0
    Incomplete:2, Reachable:10, Stale:2, Delay:2, Probe:2

Global
  Memory: 1000 bytes
  Entries: 10
    Static: 1,Dynamic: 9,Local: 0
    Incomplete:1, Reachable:5, Stale:1, Delay:1, Probe:1

VRF1
  Memory: 1000 bytes
  Entries: 10
    Static: 1,Dynamic: 9,Local: 0
    Incomplete:1, Reachable:5, Stale:1, Delay:1, Probe:1
```

Related Commands	Command	Description
	N/A	N/A

Platform Description Supported on all platforms.

3.46 show ipv6 packet statistics

Use this command to display the statistics of IPv6 packets.

show ipv6 packet statistics [**total** | *interface-name*]

Parameter Description	Parameter	Description
	total	Displays total statistics of all interfaces.
	interface-name	Interface name

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the total statistics of the Ipv6 packets and the statistics of each inerface.

```
Ruijie#show ipv6 packet statistics
Total
  Received 1000 packets, 1000000 bytes
    Unicast:1000,Multicast:0
    Discards:0
      HdrErrors:0(HoplimitExceeded:0,Others:0)
      NoRoutes:0
      Others:0
  Sent 100 packets, 6000 bytes
    Unicast:50,Multicast:50

VLAN 1
  Received 1000 packets, 1000000 bytes
    Unicast:1000,Multicast:0
    Discards:0
      HdrErrors:0(HoplimitExceeded:0,Others:0)
      NoRoutes:0
      Others:0
  Sent 100 packets, 6000 bytes
    Unicast:50,Multicast:50
```

The following example displays the total statistics of the Ipv6 packets.

```
Ruijie#show ipv6 packet statistics total
Received 1000 packets, 1000000 bytes
  Unicast:1000,Multicast:0
  Discards:0
    HdrErrors:0(HoplimitExceeded:0,Others:0)
    NoRoutes:0
    Others:0
Sent 100 packets, 6000 bytes
  Unicast:50,Multicast:50
```

Related Commands

Command	Description
N/A	N/A

Platform Description Supported on all platforms.

3.47 show ipv6 raw-socket

Use this command to display all IPv6 raw sockets.

show ipv6 raw-socket [*num*]

Parameter Description

Parameter	Description
num	Protocol.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays all IPv6 raw sockets.

```
Ruijie# show ipv6 raw-socket
Number Protocol Process name
1      ICMPv6   vrrp.elf
2      ICMPv6   tcpip.elf
3      VRRP     vrrp.elf
Total: 3
```

Field	Description
Number	Number.
Protocol	Protocol.
Process name	Process number.
Total	Total number of IPv6 raw sockets.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.48 show ipv6 routers

In the IPv6 network, some neighbor routers send out the advertisement messages. Use this command to display the neighbor routers and the advertisement.

show ipv6 routers [*interface-type interface-number*]

Parameter Description

Parameter	Description
interface-type interface-number	(Optional) Displays the routing advertisement of the specified interface.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide Use this command to display the neighbor routers and the routing advertisement. If no interface is specified, all the routing advertisement of this device will be displayed.

Configuration Examples The following example displays the IPv6 router

```
Ruijie# show ipv6 routers
Router FE80::2D0:F8FF:FEC1:C6E1 on VLAN 2, last update 62 sec
 Hops 64, Lifetime 1800 sec, ManagedFlag=0, OtherFlag=0, MTU=1500
 Preference=MEDIUM
 Reachable time 0 msec, Retransmit time 0 msec
 Prefix 6001:3::/64 onlink autoconfig
 Valid lifetime 2592000 sec, preferred lifetime 604800 sec
 Prefix 6001:2::/64 onlink autoconfig
```

Valid lifetime 2592000 seconds, preferred lifetime 604800 seconds

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.49 show ipv6 sockets

Use this command to display all IPv6 sockets.

show ipv6 sockets

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays all IPv6 sockets.

```
Ruijie# show ipv6 sockets
Number Process name    Type   Protocol  LocalIP:Port  ForeignIP:Port  State
1      vrrp.elf        RAW    ICMPv6    :::58         :::0            *
2      tcpip.elf       RAW    ICMPv6    :::58         :::0            *
3      vrrp.elf        RAW    VRRP      :::112        :::0            *
4      rg-snmpd        DGRAM  UDP       :::161        :::0            *
5      rg-snmpd        DGRAM  UDP       :::162        :::0            *
6      dhcp6.elf       DGRAM  UDP       :::547        :::0            *
7      rg-sshd         STREAM TCP       :::22         :::0            LISTEN
8      rg-telnetd      STREAM TCP       :::23         :::0            LISTEN
```

```
Total: 8
```

Field	Description
Number	Number.
Process name	Process name.
Type	Socket type. RAW indicates the raw socket. DGRAM indicates data packet type. STREAM indicates traffic type.
Protocol	Protocol number
LocalIP:Port	Local IPv6 address and port.
ForeignIP:Port	Peer IPv6 address and port.
State	State (for IPv6 TCP sockets).
Total	Total number of sockets.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.50 show ipv6 udp

Use this command to display all IPv6 UDP sockets.

show ipv6 udp [**local-port** *num*] [**peer-port** *num*]

Use this command to display IPv6 UDP socket statistics.

show ipv6 udp statistics

Parameter Description

Parameter	Description
local-port *num*	Local port number.
peer-port *num*	Peer port number.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays all IPv6 UDP sockets.

```
Ruijie# show ipv6 udp
Number Local Address   Peer Address   Process name
1      :::161          :::0           rg-snmpd
2      :::162          :::0           rg-snmpd
```

```
3       :::547          :::0          dhcp6.elf
```

Filed	Description
Number	Number.
Local Address	Local IPv6 address and port.
Peer Address	Peer IPv6 address and port.
Process name	Process name.

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

4 DHCP Commands

4.1 address range

Use this command to specify the network segment range of the addresses that can be allocated by CLASS associated with DHCP address pool. Use the **no** form of this command to restore the default setting.

address range *low-ip-address high-ip-address*

no address range

Parameter Description

Parameter	Description
low-ip-address	Start address in the network segment range.
high-ip-address	End address in the network segment range.

Defaults By default, the associated CLASS is not configured with the network segment range. The default is the address pool range.

Command Mode Address pool CLASS configuration mode.

Usage Guide Each CLASS corresponds to one network range which must be from low address to high address, so as to allow the duplication of network segment range between multiple CLASSes. If the CLASS associated with the address pool is specified without configuring the corresponding network segment range, the default network segment range of this CLASS is same as the range of the address pool where this CLASS is.

Configuration Examples The following example configures the network segment of class1 associated with address pool mypool0 ranging from 172.16.1.1 to 172.16.1.8.

```
Ruijie(config)# ip dhcp pool mypool0
Ruijie(dhcp-config)# class class1
Ruijie (config-dhcp-pool-class)# address range 172.16.1.1 172.16.1.8
```

Related Commands

Command	Description
ip dhcp pool	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.
class	Configures the CLASS associated with the DHCP address pool and enters the address pool CLASS configuration mode.

Platform Description N/A

4.2 address-manage

Use this command to enter the address manage configuration mode.

address-manage

Parameter Description

Parameter	Description
-	-

Defaults -

Command Mode Global configuration mode

Usage Guide It is server configuration, so supervlan should be applied.该

Configuration Example Enter the address manage configuration mdoe.

```
Ruijie(config)#address-manage
```

Veirification Run the **show run** command to check whether the configuration is successful.

4.3 bootfile

Use this command to define the startup mapping file name of the DHCP client. Use the **no** or **default** form of this command to restore the default setting.

bootfile *file-name*

no bootfile

default bootfile

Parameter Description

Parameter	Description
file-name	Startup file name.

Defaults No startup file name is defined by default.

Command Mode DHCP address pool configuration mode

Usage Guide Some DHCP clients need to download the operating system and configure the file during the startup. The DHCP server should provide the mapping file name required for the startup, so that DHCP clients can download the file from the corresponding server (such as TFTP). Other servers are defined by the **next-server** command.

Configuration Examples The following example defines the device.conf as the startup file name.

```
bootfile device.conf
```

Related Commands

Command	Description
ip dhcp pool	Defines the name of the DHCP address pool and enter the DHCP address pool configuration mode.
next-server	Configures the next server IP address of the DHCP client startup process.

Platform Description N/A

4.4 class

Use this command to configure the associated CLASS in the DHCP address pool. Use the **no** form of this command to restore the default setting.

class *class-name*

no class

Parameter Description

Parameter	Description
class-name	Class name, which can be the character string or numeric such as myclass or 1.

Defaults By default, no CLASS is associated with the address pool.

Command Mode DHCP address pool configuration mode

Usage Guide Each DHCP address pool performs the address assignment according to the Option82 matching information. We can divide this Option82 information into classes and specify the available network segment range for these classes in the DHCP address pool. These classes are called CLASS. One DHCP address pool can map to multiple CLASSes, and each CLASS can specify different network segment range.

During the address assignment, firstly, ensure the assignable address pool through the network segment where the client is, then according to the Option82 information further ensure the CLASS and assign the IP address from the network segment range corresponding to the CLASS. If one request packet matches multiple CLASSes in the address pool, perform the address assignment according to the sequencing of configuring the CLASS in the address pool. If this CLASS's assigned addresses have been to the upper limit, then continue to assign the address from the next CLASS, and so on. Each CLASS corresponds to one network segment range that must be from low addresses to high addresses and the duplicated network ranges between multiple CLASSes are allowed. If the CLASS corresponding to the address pool is specified and the network segment corresponding to the CLASS is not configured, this CLASS's default network segment range is same as the range of address pool where the CLASS is.

Configuration Examples The following example configures the address *mypool0* to associate with class1.

```
Ruijie(config)# ip dhcp pool mypool0
Ruijie(dhcp-config)# class class1
```

Related Commands

Command	Description
ip dhcp pool	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.

Platform Description N/A

4.5 clear ip dhcp binding

Use this command to clear the DHCP binding table in the privileged user mode.

clear ip dhcp binding { * | *ip-address* }

Parameter Description

Parameter	Description
*	Deletes all DHCP bindings.
ip-address	Deletes the binding of the specified IP addresses.

Defaults N/A.

Command Mode Privileged EXEC mode.

Usage Guide This command can only clear the automatic DHCP binding, but the manual DHCP binding can be deleted by the **no ip dhcp pool** command.

Configuration Examples The following example clears the DHCP binding with the IP address 192.168.12.100.

```
clear ip dhcp binding 192.168.12.100
```

Related Commands

Command	Description
show ip dhcp binding	Displays the address binding of the DHCP server.

Platform Description N/A

4.6 clear ip dhcp conflict

Use this command to clear the DHCP address conflict record.

clear ip dhcp conflict { * | *ip-address* }

Parameter

Parameter	Description

Description		
	*	Deletes all DHCP address conflict records.
	ip-address	Deletes the conflict record of the specified IP addresses.

Defaults N/A.

Command Mode Privileged EXEC mode.

Usage Guide The DHCP server uses the ping session to detect the address conflict, while the DHCP client uses the address resolution protocol (ARP) to detect the address conflict. The **clear ip dhcp conflict** command can be used to delete the history conflict record.

Configuration Examples The following example clears all address conflict records.

```
clear ip dhcp conflict *
```

Related Commands

Command	Description
ip dhcp ping packets	Defines the number of the data packets sent by the ping operation for the detection of the address conflict when the DHCP server assigns an IP address.
show ip dhcp conflict	Displays the address conflict that the DHCP server detects when it assigns an IP address.

Platform Description N/A

4.7 clear ip dhcp history

Use this command to clear the address assigned by the DHCP server.

clear ip dhcp history{ * | *mac-address* }

Parameter Description

Parameter	Description
*	Clears all addresses assigned by the DHCP server.
mac-address	Clears the address assigned by the DHCP server corresponding to the specified MAC address.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is configured on the DHCP server.

Configuration The following example clears all addresses assigned by the DHCP server.

Examples

```
Ruijie# clear ip dhcp history *
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.8 clear ip dhcp server rate

Use this command to clear statistics about the packet processing rate of every module.

clear ip dhcp server rate

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to clear statistics about the packet processing rate of every module, including arp, hot backup, lsm, and socket.

Configuration Examples The following example clears statistics about the packet processing rate of every module.

```
Ruijie# clear ip dhcp server rate
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.9 clear ip dhcp server statistics

Use this command to reset the counter of the DHCP server in the privileged user mode.

clear ip dhcp server statistics

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide The DHCP server carries out the statistics counter, records the DHCP address pool, automatic binding, manual binding and expired binding. Furthermore, it also carries out the statistics to the number of sent and received DHCP messages. The **clear ip dhcp server statistics** command can be used to delete the history counter record and carry out the statistics starting from scratch.

Configuration Examples The following example clears the statistics record of the DHCP server.

```
clear ip dhcp server statistics
```

Related Commands

Command	Description
show ip dhcp server statistics	Displays the statistics record of the DHCP server.

Platform Description N/A

4.10 clear ip dhcp relay statistics

Use this command to clear the DHCP relay statistics.

clear ip dhcp relay statistics [*interface-id*]

Parameter Description

Parameter	Description
interface-id	Specifies an interface

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide The DHCP relay is configured with the counter to count various packets received or transmitted by the relay. This command is used to clear the counters.

Configuration Examples The following example clears the DHCP relay statistics.

```
Ruijie# clear ip dhcp relay statistics
```

The following example clears the DHCP relay statistics on interface SVI1.

```
Ruijie#clear ip dhcp relay statistics VLAN 1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.11 client-identifier

Use this command to define the unique ID of the DHCP client (indicated in hex, separated by dot) in the DHCP address pool configuration mode. Use the **no** form of this command to restore the default setting.

client-identifier *unique-identifier*

no client-identifier

Parameter Description

Parameter	Description
unique-identifier	The DHCP client ID is indicated in hex and separated by dot, for instance, 0100.d0f8.2233.b467.6967.6162.6974.4574.6865.726e.6574.302f.31.

Defaults N/A.

Command Mode DHCP address pool configuration mode.

Usage Guide When some DHCP clients request the DHCP server to assign IP addresses, they use their client IDs rather than their hardware addresses. The client ID consists of media type, MAC addresses and interface name. For instance, the MAC address is 00d0.f822.33b4, the interface name is GigabitEthernet 0/1, and the corresponding client ID is 0100.d0f8.2233.b467.6967.6162.6974.4574.6865.726e.6574.302f.31, where, 01 denotes the type of the Ethernet media.

The 67.6967.6162.6974.4574.6865.726e.6574.302f.31 is the hex code of GigabitEthernet0/1. For the definition of the media code, refer to the Address Resolution Protocol Parameters section in RFC1700.

This command is used only when the DHCP is defined by manual binding.

Configuration Examples The following example defines the client ID of the Ethernet DHCP client whose MAC address is 00d0.f822.33b4.

```
client-identifier
0100.d0f8.2233.b467.6967.6162.6974.4574.6865.726e.6574.302f.31
```

Related Commands

Command	Description
hardware-address	Defines the hardware address of DHCP client.
host	Defines the IP address and network mask, which is used to configure the DHCP manual binding.
ip dhcp pool	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.

Platform Description N/A

4.12 client-name

Use this command to define the name of the DHCP client in the DHPC address pool configuration mode. Use the **no** form of this command to restore the default setting.

client-name *client-name*

no client-name

Parameter Description

Parameter	Description
client-name	Name of DHCP client, a set of standards-based ASCII characters. The name should not include the suffix domain name. For instance, you can define the name of the DHCP client as river, not river.i-net.com.cn.

Defaults No client name is defined by default.

Command Mode DHCP address pool configuration mode.

Usage Guide This command can be used to define the name of the DHCP client only when the DHCP is defined by manual binding. This name should not include the suffix domain name.

Configuration Examples The following example defines a string river as the name of the client.

```
Ruijie(dhcp-config)#client-name river
```

Related Commands

Command	Description
host	Defines the IP address and network mask, which is used to configure the DHCP manual binding.
ip dhcp pool	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.

Platform Description N/A

4.13 default-router

Use this command to define the default gateway of the DHCP client in the DHPC address pool configuration mode. Use the **no** form of this command to restore the default setting.

default-router *ip-address* [*ip-address2…ip-address8*]

no default-router

Parameter Description

Parameter	Description
ip-address	Defines the IP address of the equipment. It is required to configure one IP address at least.

ip-address2…ip-address8	(Optional) Up to 8 gateways can be configured.

Defaults No gateway is defined by default.

Command Mode DHCP address pool configuration mode.

Usage Guide In general, the DHCP client should get the information of the default gateway from the DHCP server. The DHCP server should specify one gateway address for the client at least, and this address should be of the same network segment as the address assigned to the client.

Configuration Examples The following example defines 192.168.12.1 as the default gateway.

```
default-router 192.168.12.1
```

Related Commands

Command	Description
ip dhcp pool	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.

Platform Description N/A

4.14 dns-server

Use this command to define the DNS server of the DHCP client in the DHPC address pool configuration mode. Use the **no** form of this command to restore the default setting.

dns-server { *ip-address* [*ip-address2…ip-address8*] | **use-dhcp-client** *interface-type interface-number* }

no dns-server

Parameter Description

Parameter	Description
ip-address	Defines the IP address of the DNS server. At least one IP address should be configured.
ip-address2…ip-address8	(Optional) Up to 8 DNS servers can be configured.
use-dhcp-client interface-type interface-number	Uses the DNS server learned by the DHCP client of the RGOS software as the DNS server of the DHCP client.

Defaults No DNS server is defined by default.

Command Mode DHCP address pool configuration mode.

Usage Guide When more than one DNS server is defined, the former will possess higher priory, so the DHCP client will select the next DNS server only when its communication with the former DNS server fails.

If the RGOS software also acts as the DHCP client, the DNS server information obtained by the client can be transmitted to the DHCP client.

Configuration Examples The following example specifies the DNS server 192.168.12.3 for the DHCP client.

```
dns-server 192.168.12.3
```

Related Commands

Command	Description
domain-name	Defines the suffix domain name of the DHCP client.
ip address dhcp	Enables the DHCP client on the interface to obtain the IP address information.
ip dhcp pool	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.

Platform Description N/A

4.15 domain-name

Use this command to define the suffix domain name of the DHCP client in the DHPC address pool configuration mode. Use the **no** form of this command to restore the default setting.

domain-name *domain-name*

no domain-name

Parameter Description

Parameter	Description
domain-name	Defines the suffix domain name string of the DHCP client.

Defaults No suffix domain name by default.

Command Mode DHCP address pool configuration mode.

Usage Guide After the DHCP client obtains specified suffix domain name, it can access a host with the same suffix domain name by the host name directly.

Configuration Examples The following example defines the suffix domain name ruijie.com.cn for the DHCP client.

```
Ruijie(dhcp-config)#domain-name ruijie.com.cn
```

Related Commands

Command	Description
dns-server	Defines the DNS server of the DHCP client.
ip dhcp pool	Defines the name of the DHCP address pool and enter the DHCP address pool configuration mode.

Platform Description N/A

4.16 hardware-address

Use this command to define the hardware address of the DHCP client in the DHPC address pool configuration mode. Use the **no** form of this command to restore the default setting.

hardware-address *hardware-address* [*type*]

no hardware-address

Parameter Description

Parameter	Description
hardware-address	Define the MAC address of the DHCP client.
type	To indicate the hardware platform protocol of the DHCP client, use the string definition or digits definition. String option: Ethernet ieee802 Digits option: 1 (10M Ethernet) 6 (IEEE 802)

Defaults No hardware address is defined by default.
If there is no option when the hardware address is defined, it is the Ethernet by default.

Command Mode DHCP address pool configuration mode.

Usage Guide This command can be used only when the DHCP is defined by manual binding.

Configuration Examples The following example defines the MAC address 00d0.f838.bf3d with the type ethernet.

```
hardware-address 00d0.f838.bf3d
```

Related Commands

Command	Description
client-identifier	Defines the unique ID of the DHCP client (Indicated by the hexadecimal numeral, separated by dot).
host	Defines the IP address and network mask, which is used to configure the DHCP manual binding.
ip dhcp pool	Defines the name of the DHCP address pool and enter the DHCP address pool configuration mode.
default-router	Defines the default route of the DHCP client.

Platform Description N/A

4.17 host

Use this command to define the IP address and network mask of the DHCP client host in the DHCP address pool configuration mode. Use the **no** form of this command to restore the default setting.

host *ip-address* [*netmask*]

no host

Parameter Description

Parameter	Description
ip-address	Defines the IP address of DHCP client.
netmask	Defines the network mask of DHCP client.

Defaults No IP address or network mask of the host is defined.

Command Mode DHCP address pool configuration mode.

Usage Guide If the network mask is not defined definitely, the DHCP server will use the natural network mask of this IP address: 255.0.0.0 for class A IP address, 255.255.0 for class B IP address, and 255.255.255.0 for class C IP address.

This command can be used only when the DHCP is defined by manual binding.

Configuration Examples The following example sets the client IP address as 192.168.12.91, and the network mask as 255.255.255.240.

```
host 192.168.12.91 255.255.255.240
```

Related Commands

Command	Description
client-identifier	Defines the unique ID of the DHCP client (Indicated in hex and separated by dot).
hardware-address	Defines the hardware address of DHCP client.
ip dhcp pool	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.
default-router	Define the default route of the DHCP client.

Platform Description N/A

4.18 ip address dhcp

Use this command to make the Ethernet interface or the PPP, HDLC and FR encapsulated interface obtain the IP address information by the DHCP in the interface configuration mode. Use the **no** form of this command to restore the default setting.

ip address dhcp

no ip address dhcp

Parameter Description	Parameter	Description
	N/A	N/A

Defaults The interface cannot obtain the ID address by the DHCP by default.

Command Mode Interface configuration mode.

Usage Guide When requesting the IP address, the DHCP client of the RGOS software also requires the DHCP server provide 5 configuration parameter information: 1) DHCP option 1, client subnet mask, 2) DHCP option 3, it is the same as the gateway information of the same subnet, 3) DHCP option 6, the DNS server information, 4) DHCP option 15, the host suffix domain name, and 5) DHCP option 44, the WINS server information (optional).
The client of the RGOS software is allowed to obtain the address on the PPP, FR or HDL link by the DHCP, which should be supported by the server. At present, our server can support this function.

Configuration Examples The following example makes the FastEthernet 0 port obtain the IP address automatically.

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1) ip address dhcp
```

Related Commands	Command	Description
	dns-server	Defines the DNS server of DHCP client.
	ip dhcp pool	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.

Platform Description N/A

4.19 ip dhcp class

Use this command to define a CLASS and enter the global CLASS configuration mode. Use the **no** form of this command to restore the default setting.
ip dhcp class *class-name*
no ip dhcp class *class-name*

Parameter Description	Parameter	Description
	class-name	Class name, which can be character string or numeric such as myclass or 1.

Defaults By default, the class is not configured.

Command Global configuration mode.

Mode

Usage Guide After executing this command, it enters the global CLASS configuration mode which is shown as “Ruijie (config-dhcp-class)#”. In this configuration mode, user can configure the Option82 information that matches the CLASS and the CLASS identification information.

Configuration Examples The following example configures a global CLASS.

```
Ruijie(config)# ip dhcp class myclass
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.20 ip dhcp excluded-address

Use this command to define some IP addresses and make the DHCP server not assign them to the DHCP client in the global configuration mode. Use the **no** form of this command to restore the default setting.

ip dhcp excluded-address *low-ip-address* [*high-ip-address*]

no ip dhcp excluded-address *low-ip-address* [*high-ip-address*]

Parameter Description

Parameter	Description
low-ip-address	Excludes the IP address, or excludes the start IP address within the range of the IP address.
high-ip-address	Excludes the end IP address within the range of the IP address.

Defaults The DHCP server assigns the IP addresses of the whole address pool by default.

Command Mode Global configuration mode.

Usage Guide If the excluded IP address is not configured, the DHCP server attempts to assign all IP addresses in the DHCP address pool. This command can reserve some IP addresses for specific hosts to prevent these addresses are assigned to the DHCP client, and define the excluded IP address accurately to reduce the conflict detecting time when the DHCP server assigns the address.

Configuration Examples In the following example, the DHCP server will not attempt to assign the IP addresses within 192.168.12.100~150.

```
ip dhcp excluded-address 192.168.12.100 192.168.12.150
```

Related

Command	Description

Commands		
	ip dhcp pool	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.
	network (DHCP)	Defines the network number and network mask of the DHCP address pool.

Platform Description N/A

4.21 ip dhcp force-send-nak

Use this command to configure the forcible NAK packet sending function. Use the **no** or **default** form of this command to restore the default setting.

ip dhcp force-send-nak

no ip dhcp force-send-nak

default ip dhcp force-send-nak

Parameter Description	Parameter	Description
	N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode.

Usage Guide The DHCP client checks the previously used IP address every time it is started and sends a DHCPREQUEST packet to continue leasing this IP address. If the address is not available, the DHCP server sends an NAK packet to let the client resend a DHCPDISCOVER packet to apply for a new IP address. If no corresponding lease record can be found on the server, the client keeps sending DHCPDISCOVER packets. The forcible NAK packet sending function is added to shorten the interval at which the client sends DHCPDISCOVER packets.

Configuration Examples The following example enables the forcible NAK packet sending function in global configuration mode.

```
Ruijie(config)# ip dhcp force-send-nak
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

4.22 ip dhcp monitor-vrrp-state

Use this command in layer-3 configuration mode to enable the DHCP Server to monitor the status of VRRP interfaces so that the DHCP Server processes only those packets sent from a VRRP interface in the Master state. Use the **no** form of this command to restore the default setting. If it is canceled, the DHCP Server processes packets from VRRP interfaces in the Master or Backup state.

ip dhcp monitor-vrrp-state

no ip dhcp monitor-vrrp-state

Parameter Description

Parameter	Description
N/A	N/A

Defaults The **ip dhcp monitor-vrrp-state** command is disabled by default. .

Command Mode Layer-3 interface configuration mode.

Usage Guide If a VRRP address is configured for an interface, the DHCP Server processes packets sent from the master interface and discards packets sent from the backup interface. If no VRRP address is configured, the DHCP Server does not monitor the status of VRRP interfaces. All DHCP packets will be processed.

Configuration Examples The following example enables the DHCP Server to monitor the status of VRRP interfaces.

```
Ruijie(config-if)# ip dhcp monitor-vrrp-state
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.23 ip dhcp ping packet

Use this command to configure the times of pinging the IP address when the DHCP server detects address conflict in the global configuration mode. Use the **no** form of this command to restore the default setting.

ip dhcp ping packet [*number*]

no ip dhcp ping packet

Parameter Description

Parameter	Description
number	(Optional) Number of packets in the range of 0 to 10, where 0 indicates disabling the ping operation. The Ping operation sends two packets by default.

Defaults The Ping operation sends two packets by default.

Command Mode Global configuration mode.

Usage Guide When the DHCP server attempts to assign the IP address from the DHCP address pool, use the ping operation to check whether this address is occupied by other hosts. Record it if the address is occupied, otherwise, assign it to the DHCP client. The Ping operation will send up to 10 packets, two packets by default.

Configuration Examples The following example sets the number of the packets sent by the ping operation as 3.

```
ip dhcp ping packets 3
```

Related Commands

Command	Description
clear ip dhcp conflict	Clears the DHCP history conflict record.
ip dhcp ping packet	Configures the timeout time that the DHCP server waits for the Ping response. If all the ping packets are not responded within the specified time, it indicates that this IP address can be assigned. Otherwise, it will record the address conflict.
show ip dhcp conflict	Displays the DHCP server detects address conflict when it assigns an IP address.

Platform Description N/A

4.24 ip dhcp ping timeout

Use this command to configure the timeout that the DHCP server waits for response when it uses the ping operation to detect the address conflict in the global configuration mode. Use the **no** form of this command to restore the default setting.

ip dhcp ping timeout *milli-seconds*

no ip dhcp ping timeout

Parameter Description

Parameter	Description
milli-seconds	Time that the DHCP server waits for ping response in the range 100 to 10000 milliseconds.

Defaults The default is 500 seconds.

Command Mode Global configuration mode.

Usage Guide This command defines the time that the DHCP server waits for a ping response packet.

Configuration Examples The following example configures the waiting time of the ping response packet to 600ms.

```
ip dhcp ping timeout 600
```

Related Commands

Command	Description
clear ip dhcp conflict	Clears the DHCP history conflict record.
ip dhcp ping packets	Defines the number of the data packets sent by the ping operation for the detection of the address conflict when the DHCP server assigns an IP address.
show ip dhcp conflict	Displays the address conflict the DHCP server detects when it assigns an IP address.

Platform Description N/A

4.25 ip dhcp pool

Use this command to define a name of the DHCP address pool and enter the DHCP address pool configuration mode in the global configuration mode. Use the **no** form of this command to restore the default setting.

ip dhcp pool *pool-name*

no ip dhcp pool *pool-name*

Parameter Description

Parameter	Description
pool-name	A string of characters and positive integers, for instance, mypool or 1.

Defaults No DHCP address pool is defined by default.

Command Mode Global configuration mode.

Usage Guide Execute the command to enter the DHCP address pool configuration mode:

```
Ruijie(dhcp-config)#
```

In this configuration mode, configure the IP address range, the DNS server and the default gateway.

Configuration Examples The following example defines a DHCP address pool named mypool0.

```
ip dhcp pool mypool0
```

Related Commands

Command	Description
host	Defines the IP address and network mask, which is used to configure the DHCP manual binding.
ip dhcp excluded-address	Defines the IP addresses that the DHCP server cannot assign to the

	clients.
network (DHCP)	Defines the network number and network mask of the DHCP address pool.

Platform Description N/A

4.26 ip dhcp relay disable

Use this command to disable DHCP relay. Use the **no** form of this command to enable DHCP relay.

ip dhcp relay disable

no ip dhcp relay disable

Parameter Description

Parameter	Description
N/A	N/A

Defaults DHCP relay is disabled by default.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example disables DHCP relay.

```
Ruijie(config-if-VLAN 1)#ip dhcp relay disable
```

The following example enables DHCP relay.

```
Ruijie(config-if-VLAN 1)#no ip dhcp relay disable
```

Related Commands

Command	Description
service dhcp	Enables the DHCP Relay.

Platform Description N/A

4.27 ip dhcp relay check server-id

Use this command to enable the **ip dhcp relay check** *server-id* function. Use the **no** form of this command to restore the default setting.

ip dhcp relay check server-id

no ip dhcp relay check server-id

Parameter Description

Parameter	Description
N/A	N/A

Defaults The **ip dhcp relay check server-id** command is disabled.

Command Mode Global configuration mode.

Usage Guide Switch will select the server to be sent according to server-id option when forwarding DHCP REQUEST via this command. Without this command configured, the switch forwards the DHCP REQUEST to all configured DHCP servers.

Configuration Examples The following example enables the ip dhcp relay check server-id function.

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp relay check server-id
```

Related Commands

Command	Description
service dhcp	Enables the DHCP Relay.

Platform Description N/A

4.28 ip dhcp relay force-send-reply-pack

Use this command to force the DHCP Relay to send reply messages. Use the **no** form of this command to restore the default setting.

ip dhcp relay force-send-reply-pack

no ip dhcp relay force-send-reply-pack

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode.

Usage Guide This command is configured on the DHCP Relay. When the DHCP Relay, according to the MAC address, fails to find to which interface the reply message should be sent, if this feature is enabled, the reply message will be sent to the gateway interface; if this feature is not enabled, the reply message will be discarded.

Configuration Examples The following example sets the custom string for circuit-id.

```
Ruijie(config)# ip dhcp relay information circuit-id format hex abc111
Ruijie(config)# ip dhcp relay information circuit-id format ascii
device-test
```

The following example disables this function.

```
Ruijie(config)# no ip dhcp relay information circuit-id format hex
Ruijie(config)# no ip dhcp relay information circuit-id format ascii
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.29 ip dhcp relay link-selection

Use this command to configure DHCP Link Selection (DHCP option 82, suboption 5). Use the **no** form of this command to restore the default setting.

ip dhcp relay link-selection *ip-address*

no ip dhcp relay link-selection

Parameter Description

Parameter	Description
ip-address	Specifies an IP address for DHCP Link Selection

Defaults By default, the primary IP address of the interface is used for DHCP Link Selection.

Command Mode Interface configuration mode

Usage Guide This command is performed on the Relay device.

Before enabling this feature, you need to enable DHCP Option 82 and configure the source IP address of DHCP Relay packets first.

After DHCP Link Selection is configured, suboption 5 is filled in the packets by the Relay device. By default, the primary IP address of the interface is adopted for suboption 5. By specifying the *ip address* field, you can fill any legal unicast IP address in suboption 5.

Configuration Examples The following example configures DHCP Link Selection.

```
Ruijie(config)# ip dhcp relay link-selection 10.1.1.1
```

The following example restores the default setting.

```
Ruijie(config)# no ip dhcp relay link-selection
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.30 ip dhcp relay multiple-giaddr

Use this command to enable multiple gateway IP addresses on DHCP Relay. Use the **no** form of this command to restore the default setting.

ip dhcp relay multiple-giaddr

no ip dhcp relay multiple-giaddr

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide This command is configured on the server. When this function is configured, DHCP Relay requires IP addresses from the DHCP server by application of several interface IP addresses.

When multiple gateway IP addresses are configured on interfaces, the master gateway IP address serves as the gateway IP address of the DHCP Relay, and the DHCP server allocates IP segments according to the gateway IP address of the DHCP Relay. After this function is enabled, if a client fails to apply for an IP address from the gateway with the master IP address, it can apply for one from a gateway with a slave IP address.

Configuration Examples The following example enables multiple gateway IP addresses.

```
Ruijie(config)# ip dhcp relay multiple-giaddr
```

The following example disables this function.

```
Ruijie(config)# no ip dhcp relay multiple-giaddr
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.31 ip dhcp relay information option82

Use this command to configure to enable the **ip dhcp relay information option82** function. Use the **no** form of this command to restore the default setting.

ip dhcp relay information option82

no ip dhcp relay information option82

Parameter

Parameter	Description

Description	N/A	N/A

Defaults The **ip dhcp relay information option82** command is disabled.

Command Mode Global configuration mode.

Usage Guide This command is exclusive with the **option dot1x** command.

Configuration Examples The following example enables the option82 function on the DHCP relay.

```
Ruijie# configure terminal
Ruijie(config)# Ip dhcp relay information option82
```

Related Commands	**Command**	**Description**
	service dhcp	Enables the DHCP Relay.

Platform Description N/A

4.32 ip dhcp relay information option82 user-defined circuit-id

Use this command to configure a user-defined circuit ID in DHCP Option 82. Use the **no** form of this command to disable the user-definition function for the circuit ID in DHCP Option 82. Use the **default** form of this command to restore the default settings.

ip dhcp relay information option82 user-defined circuit-id *text*

no ip dhcp relay information option82 user-defined circuit-id

default ip dhcp relay information option82 user-defined circuit-id

Parameter Description

Parameter	**Description**
text	Indicates the user-defined circuit ID in the string format. The length of the value ranges from 1 to 255. For details, see the description in the usage guide.

Defaults The user-definition function for the circuit ID in DHCP Option 82 is disabled by default.

Command Mode Global configuration mode

Default Level 14

Usage Guide After enabling the function of adding Option 82 to DHCP packets, you can run the **ip dhcp relay information option82 user-defined** command to configure the format of the added Option82 as required.

When defining the format of Option 82, you can use the following keywords. The format string behind

the keywords can be set to the hexadecimal encapsulation format, ASCII encapsulation format, or hexadecimal and ASCII hybrid encapsulation format.

hostname: Indicates the host name, for example, **Ruijie**. It is available only in the ASCII format.

devicename: Indicates the device model. It is available only in the ASCII format.

portname: Indicates the interface name, for example, TenGigabitEthernet 0/2. It is available only in the ASCII format.

portsname: Indicates the interface name abbreviation, for example, Te0/2. It is available only in the ASCII format.

porttype: Indicates the interface type. It is available in the string format and hexadecimal format. Actually saved data is hexadecimal.

sysmac: Indicates the interface MAC address. It is in the H.H.H format in ASCII mode by default and encapsulated using six bytes in sequence in hexadecimal mode.

usermac: Indicates the user MAC address. It is in the H.H.H format in ASCII encapsulation by default and is encapsulated by using six bytes in sequence in hexadecimal format.

slot: Indicates the slot number. It is available in the ASCII format and hexadecimal format. Actually saved data is hexadecimal.

port: Indicates the port ID. It is available in the ASCII format and hexadecimal format. Actually saved data is hexadecimal.

svlan: Indicates the outer VLAN. It is available in the ASCII format and hexadecimal format. The value ranges from **1** to **4094**.

cvlan: Indicates the inner VLAN. It is available in the ASCII format and hexadecimal format. The value ranges from **1** to **4094**.

length: Indicates the total length of data behind the **length** keyword.

Special characters are described as follows:

% followed by keywords defined above indicates the format of the keywords.

When the percent symbol (%) needs to be contained in the input string, enter **%%**, which will be converted into a single common percent symbol (%) during parsing.

The backslash (\) indicates an escape character, and a special character following the backslash (\) indicates the special character itself. For example, **** indicates the backslash (\) and \" indicates the quotation mark (").

The quotation marks ("") indicate that data enclosed using the double quotation masks is encapsulated in the string format. Data without or outside double quotation masks is encapsulated in the hexadecimal format.

Strings in the ASCII format can contain 0 to 9, a to z, A to Z, and the following symbols: !@#$%^&*()_+|-=\[]{};:'"/?.,<>`.

For characters %\" in the ASCII format, add the prefix (\) to the front of the characters. In the ASCII format, only keywords and several specific symbols are converted and other data remains unchanged. If there is no escape character '\' in front of '%' in configuration commands, the key value in the information field must be added behind. Otherwise, the configuration is incorrect and an error is prompted. If the character '\' needs to be configured, enter **"\\"**.

For strings in the hexadecimal format, digits are encapsulated into Option 82 in hexadecimal notation. When hexadecimal data is used, strings begin with 0X or 0x. When the number of valid characters in the hexadecimal data is an odd, add one 0 to the frontmost. When decimal data is used, the data ranges from **0** and **255** and occupies one byte. You can use spaces to enter multiple pieces of decimal

data consecutively.
Blank characters in hexadecimal notation are ignored.
If the user-definition function is configured but no corresponding user-defined format is configured, each suboption of Option 82 is padded in standard mode.

Configuration Example

The following example configures a user-defined circuit ID in DHCP Option 82.

```
Ruijie(config)# ip dhcp relay information user-defined circuit-id
"%hostname-%portname"
```

The following example disables the user-definition function for the circuit ID in DHCP Option 82.

```
Ruijie(config)# no ip dhcp relay information user-defined circuit-id
```

Verification

Run the **show running-config** command to check whether the configuration is successful.

Common Errors

The user-defined string does not meet configuration requirements.

4.33 ip dhcp relay information option82 user-defined remote-id

Use this command to configure a user-defined remote ID in DHCP Option 82. Use the **no** form of this command to disable user-definition function for the remote ID in DHCP Option 82. Use the **default** form of this command to restore the default settings.

ip dhcp relay information option82 user-defined remote-id *text*

no ip dhcp relay information option82 user-defined remote -id

default ip dhcp relay information option82 user-defined remote-id

Parameter Description

Parameter	Description
text	Indicates the user-defined remote ID in the string format. The length of the value ranges from 1 to 255. For details, see the description in the usage guide.

Defaults

The user-definition function for the remote ID in DHCP Option 82 is disabled by default.

Command Mode

Global configuration mode

Default Level

14

Usage Guide

See the usage guide of the **ip dhcp relay information user-defined circuit-id** command.

Configuration Example

The following example configures a user-defined remote ID in DHCP Option 82.

```
Ruijie(config)# ip dhcp relay information user-defined remote-id
"%hostname-%portname"
```

The following example disables the user-definition function for the remote ID in DHCP Option 82.

```
Ruijie(config)# no ip dhcp relay information user-defined remote -id
```

Verification

Run the **show running-config** command to check whether the configuration is successful.

Common Errors	The user-defined string does not meet configuration requirements.

4.34 ip dhcp relay information option82 user-defined mac-format

Use this command to configure the format of the MAC address string in the suboption of DHCP Option 82. Use the **no** form of this command to cancel the configured format of the MAC address string in the suboption of DHCP Option 82. Use the **default** form of this command to restore the default settings.

ip dhcp relay information option82 user-defined mac-format *type*

no ip dhcp relay information option82 user-defined mac-format

default ip dhcp relay information option82 user-defined mac-format

Parameter Description

Parameter	Description
Type	Indicates the format of the MAC address in the string format. The value ranges from **0** to **2** and the default value is **0**. **0** indicates the H.H.H format, **1** indicates the H-H-H format, and **2** indicates the H:H:H:H:H:H format.

Defaults	The MAC address string is in the H.H.H format by default.
Command Mode	Global configuration mode
Default Level	14
Usage Guide	This command is used to configure the format of the MAC address string. The value ranges from **0** to **2** and the default value is **0**. **0** indicates the H.H.H format, **1** indicates the H-H-H format, and **2** indicates the H:H:H:H:H:H format.

Configuration Example	The following example configures the format of the MAC address string in the suboption of DHCP Option 82.
	`Ruijie(config)# ip dhcp relay information user-defined mac-format 1`
	The following example cancels the configured format of the MAC address string in the suboption of DHCP Option 82.
	`Ruijie(config)# no ip dhcp relay information user-defined mac-format`

Verification	Run the **show running-config** command to check whether the configuration is successful.

4.35 ip dhcp relay-information enable

Use this command to enable DHCP relay option 82 Use the **no** form of this command to disable DHCP relay option 82.

ip dhcp relay-information enable
no ip dhcp relay-information enable

Parameter Description	**Parameter**	**Description**
	N/A	N/A

Defaults DHCP relay option 82 is disabled by default.

Command Mode Interface configuration mode.

Usage Guide After this command is configured, the DHCP packet forwarded by DHCP relay will contain DHCP option 82. If no sub-option is configured, the standard format will be used.

Configuration Examples The following example enables DHCP relay option 82.

```
Ruijie(config-if-VLAN 1)#ip dhcp relay-information enable
```

The following example disables DHCP relay option 82.

```
Ruijie(config-if-VLAN 1)#no ip dhcp relay-information enable
```

Related Commands	**Command**	**Description**
	N/A	N/A

Platform Description N/A

4.36 ip dhcp relay information layer3 circuit-id format

Use this command to set the custom string for circuit-id for a layer-3 interface. Use the **no** form of this command to disable this function.
ip dhcp relay-information layer3 circuit-id format { **hex** | **ascii** } *string*
no ip dhcp relay-information layer3 circuit-id format { **hex** | **ascii** }

Parameter Description	**Parameter**	**Description**
	hex	Hexadecimal
	ascii	ASCII code.
	string	Custom string

Defaults This function is disabled by default.

Command Mode Interface configuration mode.

Usage Guide This command is configured on the DHCP Relay. When you configure the **ip dhcp relay information**

circuit-id format command, the device, as the DHCP Relay, adds the option information in the DHCP request packets.

Configuration Examples The following example sets the custom string for circuit-id for a layer-3 interface.

```
Ruijie(config-if-VLAN 1)# ip dhcp relay-information layer3 circuit-id format hex abc123
Ruijie(config-if-VLAN 1)# ip dhcp relay-information layer3 circuit-id format ascii port-test
```

The following example disables this function.

```
Ruijie(config-if-VLAN 1)# no ip dhcp relay-information layer3 circuit-id format hex
Ruijie(config-if-VLAN 1)# no ip dhcp relay-information layer3 circuit-id format ascii
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.37 ip dhcp relay information remote-id format

Use this command to set the custom string for remote-id for a layer-3 interface. Use the **no** form of this command to disable this function.

ip dhcp relay-information layer3 remote-id format { **hex | ascii** } *string*

no ip dhcp relay-information layer3 remote-id format { **hex** | **ascii** }

Parameter Description

Parameter	Description
hex	Hexadecimal
ascii	ASCII code
string	Custom string

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide This command is configured on the DHCP Relay. When you configure the **ip dhcp relay information remote-id format** command, the device, as the DHCP Relay, adds the option information in the DHCP request packets.

Configuration Examples The following example sets the custom string for circuit-id for a layer-3 interface.

```
Ruijie(config-if-VLAN 1)# ip dhcp relay-information layer3 remote-id format hex 123456
Ruijie(config-if-VLAN 1)# ip dhcp relay-information layer3 remote-id format ascii port-test
```

The following example disables this function.

```
Ruijie(config-if-VLAN 1)# no ip dhcp relay-information layer3 remote-id format hex
Ruijie(config-if-VLAN 1)# no ip dhcp relay-information layer3 remote-id format ascii
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

4.38 ip dhcp relay suppression

Use this command to enable the DHCP binding globally. Use the **no** form of this command to disable the DHCP binding globally and enable the **DHCP relay** suppression on the port.

ip dhcp relay suppression

no ip dhcp relay suppression

Parameter Description	Parameter	Description
	N/A	N/A

Defaults The **ip dhcp relay suppression** command is disabled.

Command Mode Interface configuration mode.

Usage Guide After executing this command, the system will not relay the DHCP request message on the interface.

Configuration Examples The following example enables the relay suppression function on the interface 1.

```
Ruijie# configure terminal
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip dhcp relay suppression
Ruijie(config-if)# exit
Ruijie(config)#
```

Related Commands	Command	Description
	service dhcp	Enables the DHCP Relay.

Platform Description N/A

4.39 ip dhcp relay source

Use this command to configure the source IP address of DHCP Relay packets. Use the **no** form of this command to restore the default setting.

ip dhcp relay source *ip-address*

no ip dhcp relay source

Parameter Description

Parameter	Description
ip-address	Specifies the source IP address of DHCP Relay packets.

Defaults By default, no source IP address is configured for DHCP Relay packets.

Command Mode Interface configuration mode

Usage Guide This command should be run on the Relay device. Only one source IP address of DHCP Relay packets can be configured on one interface.

Configuration Examples The following example configures the source IP address of DHCP Relay packets.

```
Ruijie(config-if)# ip dhcp relay source 1.1.1.1
```

The following example restores the default setting.

```
Ruijie(config-if)# no ip dhcp relay source
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.40 ip dhcp smart-relay

Use this command to enable the automatic gateway address switching of the DHCP relay. Use the **no** form of this command to disable the automatic gateway address switching of the DHCP relay.

ip dhcp smart-relay

no ip dhcp smart-relay

Parameter Description

Parameter	Description
N/A	N/A

Defaults The automatic gateway address switching function of the DHCP relay is disabled by default.

Command Mode Global configuration mode

Default Level 14

Usage Guide This command is configured on the relay. When multiple IP addresses are configured for an interface, the master IP address is used as the value of the **giaddr** field of the DHCP relay in normal cases, and the DHCP server assigns a network segment based on the **giaddr** field. This function can be used so that a client can use the slave IP address as the gateway address to apply for an IP address when the client fails to apply for an IP address by using the master IP address as the gateway address. With this function enabled, if the DHCP relay fails to receive a response after forwarding the Discover packet for three times, it uses another address to pad the **giaddr** field.

Configuration Example The following example enables the DHCP smart relay function.

```
Ruijie(config)# ip dhcp smart-relay
```

The following example disables the DHCP smart relay function.

```
Ruijie(config)# no ip dhcp smart-relay
```

Verification Run the **show running-config** command to check whether the configuration is successful.

Platform Description The slave IP address of an interface is used as the gateway address only when the following conditions are both met: A user uses the master IP address of the interface as the gateway address to apply for an address from the remote server but fails for three consecutive times; the interval between the first failure and the third failure exceeds 24 seconds.

One master IP address and multiple slave IP addresses can be configured for an interface. The relay gateway address switching sequence starts from the master IP address to slave IP addresses (slave IP addresses are traversed based on their configured sequence) until an IP address is obtained successfully.

4.41 ip dhcp use class

Use this command to enable the CLASS to allocate addresses in the global configuration mode. Use the **no** form of this command can be used to disable the CLASS.

ip dhcp use class

no ip dhcp use class

Parameter Description

Parameter	Description
N/A	N/A

Defaults Enabled

Command Mode This function is enabled by defualt.

Usage Guide N/A

Configuration Examples The following example enables the CLASS to allocate addresses.

```
Ruijie(config)# ip dhcp use class
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.42 ip helper-address

Use this command to add an IP address of the DHCP server. Use the **no** form of this command to delete an IP address of the DHCP server.

The server address can be configured globally or on a specific interface. Therefore, this command can run in the global configuration mode or the interface configuration mode to add the DHCP server information.

ip helper-address [**vrf** *vrf-name*] *A.B.C.D*

no ip helper-address [**vrf** *vrf-name*] *A.B.C.D*

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Global configuration mode, interface configuration mode.

Usage Guide Up to 20 DHCP server IP addresses can be configured globally or on a layer-3 interface.

One DHCP request of this interface will be sent to these servers. You can select one for confirmation.

The global configuration and port-based configuration of the vrf are slightly different. In the global configuration mode, if the vrf is not specified, the default address of the current server does not belong to any vrf. In the port-based configuration, if the vrf is not specified, the current default server and port configurations belong to the same vrf.

Configuration Examples The following example configures the addresses for two servers.

1. Set the IP address for the global server to 192.168.1.1
2. Set the IP address for the vrf instance-based server delp1 to 192.168.2.1

```
Ruijie# configure terminal
Ruijie(config)# ip helper-address 192.168.1.1
Ruijie(config)# ip helper-address vrf dep1 192.168.2.1
```

Related

Command	Description

Commands	service dhcp	Enables the DHCP relay.

Platform Description N/A

4.43 lease

Use this command to define the lease time of the IP address that the DHCP server assigns to the client in the DHCP address pool configuration mode. Use the **no** form of this command to restore the default setting. A limited lease time ranges from 1 minute to 23 hours and 59 minutes.

lease { *days* [*hours*] [*minutes*] | **infinite** }

no lease

Parameter Description

Parameter	Description
days	Lease time in days
hours	(Optional) Lease time in hours. It is necessary to define the days before defining the hours.
minutes	(Optional) Lease time in minutes. It is necessary to define the days and hours before defining the minutes.
infinite	Infinite lease time.

Defaults The lease time for a static address pool is infinite. The lease time for other address pools is 1 day.

Command Mode DHCP address pool configuration mode.

Usage Guide When the lease is getting near to expire, the DHCP client will send the request of renewal of lease. In general, the DHCP server will allow the renewal of lease of the original IP address.

Configuration Examples The following example sets the DHCP lease to 1 hour.

```
lease 0 1
```

The following example sets the DHCP lease to 1 minute.

```
lease 0 0 1
```

Related Commands

Command	Description
ip dhcp pool	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.

Platform Description N/A

4.44 lease-threshold

Use this command in DHCP address pool configuration mode to define the DHCP alarm threshold.
Use the **default** or **no** form of this command to restore the default setting.
lease-threshold *percentage*
defaut lease-threshold
no lease-threshold

Parameter Description	Parameter	Description
	percentage	Usage of the address pool, ranging from 60 to 100 in percentage.

Defaults 90

Command Mode DHCP address pool configuration mode.

Usage Guide If the maximum IP usage of the address pool reaches the threshold, the DHCP Server generates a SYSLOG alarm. The IP usage indicates the ratio of the number of assigned address pools to the total number of assignable address pools. If the number of assigned pools stays above the alarm threshold, an alarm is generated every 5 minutes.

Configuration Examples The following example sets the alarm threshold to 80%.

```
lease-threshold 80
```

The following example restores the default alarm threshold.

```
default lease-threshold
```

The following example disables the address pool alarm function.

```
no lease-threshold
```

Related Commands	Command	Description
	ip dhcp pool	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.

Platform Description N/A

4.45 match ip

Use this command to define address manage matching rules. **match ip :**
match ip *ip-address netmask* [*interface*] [**add/remove**] **vlan** *vlan-list*

Use the **no** form of this command to delete the definition.
no match ip *ip-address netmask* [*interface*] [**add/remove**] **vlan** *vlan-list*

Use the **clear** form of this command to delete all definitions.
clear match ip [*interface*]

Parameter Description

Parameter	Description
ip-address	IP address
netmask	Netmask
interface	Interface name
add/remove	Add or remove a vlan
vlan-list	VLAN index

Defaults N/A

Command Mode Address manage configuration mode

Usage Guide 1: After this command is configured, all DHCP clients from a specified vlan + port obtain addresses of the configured range.
2: In the supervlan scenario, if a client is qualified for configuration of the DHCP static address pool, whichever subvlan the client is in, a same static address is assigned. And address manage does not need to configure the address based on all subvlans/ports but to configure the address to be in the corresponding vlan range. This rule only applies to assigning static addresses.

Configuration Example 1: Define vlan index 10 as the source of matching rule. For the DHCP client whose interface name is GigabitEthernet 0/10, set the network ID to 192.168.11.0 and mask 255.255.255.0.

```
Ruijie(config-address-manage)#match ip 192.168.11.0 255.255.255.0 GigabitEthernet 0/10 vlan 10
```

Verification Run the **show run** command to check whether the configuration is successful.

4.46 match ip default

Use this command to define default address manage matching rules. **match ip default;**

match ip default *ip-address netmask*

Use the **no** form of the command to delete the definition.
no match ip default *ip-address netmask*

Parameter Description

Parameter	Description
ip-address	IP address
netmask	Netmask

Defaults N/A

Command Mode Address manage configuration mode

Usage Guide After configuring this command, all DHCP clients for which vlan + port/vlan have not been configured obtain addresses of the default range. If this command is not configured and there is not vlan + port configuration as well, addresses are assigned in the normal process.

Configuration Example 1: Define the default matching rule: network ID: 192.168.12.0, mask: 255.255.255.0

```
Ruijie(config-address-manage)#match ip default 192.168.12.0 255.255.255.0
```

Verification Run the **show run** command to check whether the configuration is successful.

4.47 netbios-name-server

Use this command to configure the WINS name server of the Microsoft DHCP client NETBIOS in the DHCP address pool configuration mode. The **no** form of this command can be used to restore the default setting.

netbios-name-server *ip-address* [*ip-address2…ip-address8*]

netbios-name-server

Parameter Description

Parameter	Description
ip-address	IP address of the WINS server. It is required to configure one IP address at least.
ip-address2…ip-address8	(Optional) IP addresses of WINS servers. Up to 8 WINS servers can be configured.

Defaults No WINS server is defined by default.

Command Mode DHCP address pool configuration mode.

Usage Guide When more than one WINS server is defined, the former has higher priory. The DHCP client will select the next WINS server only when its communication with the former WINS server fails.

Configuration Examples The following example specifies the WINS server 192.168.12.3 for the DHCP client.

```
netbios-name-server 192.168.12.3
```

Related Commands

Command	Description
ip address dhcp	Enables the DHCP client on the interface to obtain the IP address.
ip dhcp pool	Defines the name of the DHCP address pool and enter the DHCP address pool configuration mode.

netbios-node-type	Defines the netbios node type of the client host.

Platform Description N/A

4.48 netbios-node-type

Use this command to define the node type of the master NetBIOS of the Microsoft DHCP client in the DHCP address configuration mode. Use the **no** form of this command to restore the default setting.

netbios-node-type *type*

no netbios-node-type

Parameter Description

Parameter	Description
type	Type of node in two modes: Digit in hexadecimal form in the range of 0 to FF. Only the following numerals are available: 1: b-node. 2: p-node. 4: m-node. 8: h-node. String: b-node: broadcast node p-node: peer-to-peer node m-node: mixed node h-node: hybrid node

Defaults No type of the NetBIOS node is defined by default.

Command Mode DHCP address pool configuration mode.

Usage Guide There are 4 types of the NetBIOS nodes of the Microsoft DHCP client: 1) Broadcast, which carries out the NetBIOS name resolution by the broadcast method, 2) Peer-to-peer, which directly requests the WINS server to carry out the NetBIOS name resolution, 3) Mixed, which requests the name resolution by the broadcast method firstly, and then carry out the name resolution by the WINS server connection, 4) Hybrid, which requests the WINS server to carry out the NetBIOS name resolution firstly, and it will carry out the NetBIOS name resolution by the broadcast method if the response is not received.

By default, the node type for Microsoft operating system is broadcast or hybrid. If the WINS server is not configured, broadcast node is used. Otherwise, hybrid node is used. It is recommended to set the type of the NetBIOS node as Hybrid.

Configuration Examples The following example sets the NetBIOS node of Microsoft DHCP client as Hybrid.

```
netbios-node-type h-node
```

Related Commands

Command	Description
ip dhcp pool	Defines the name of DHCP address pool and enters the DHCP address pool configuration mode.
netbios-name-server	Configures the WINS name server of the Microsoft DHCP client NETBIOS.

Platform Description N/A

4.49 network (DHCP)

Use this command to define the network number and network mask of the DHCP address pool in the DHCP address pool configuration mode. Use the **no** form of this command to restore the default setting.

network *net-number net-mask*

no network

Parameter Description

Parameter	Description
net-number	Network number of the DHCP address pool
net-mask	Network mask of the DHCP address pool. If the network mask is not defined, the natural network mask will be used by default.

Defaults No network number or network mask is defined by default.

Command Mode DHCP address pool configuration mode.

Usage Guide This command defines the subnet and subnet mask of a DHCP address pool, and provides the DHCP server with an address space which can be assigned to the clients. Unless excluded addresses are configured, all the addresses of the DHCP address pool can be assigned to the clients. The DHCP server assigns the addresses in the address pool orderly. If the DHCP server found an IP address is in the DHCP binding table or in the network segment, it checks the next until it assigns an effective IP address.

The **show ip dhcp binding** command can be used to view the address assignment, and the **show ip dhcp conflict** command can be used to view the address conflict detection configuration.

Configuration Examples The following example defines the network number of the DHCP address pool as 192.168.12.0, and the network mask as 255.255.255.240.

```
network 192.168.12.0 255.255.255.240
```

Related Commands

Command	Description
ip dhcp excluded-address	Defines the IP addresses that the DHCP server cannot assign to the

	clients.
ip dhcp pool	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.

Platform Description N/A

4.50 next-server

Use this command to define the startup sever list that the DHCP client accesses during startup in the DHCP address configuration mode. Use the **no** form of this command to restore the default setting.

next-server *ip-address* [*ip-address2…ip-address8*]

no next-server

Parameter Description

Parameter	Description
ip-address	Defines the IP address of the startup server, which is usually the TFTP server. It is required to configure one IP address at least.
ip-address2…ip-address8	(Optional) Up to 8 startup servers can be configured.

Defaults N/A

Command Mode DHCP address pool configuration mode.

Usage Guide When more than one startup server is defined, the former will possess higher priory. The DHCP client will select the next startup server only when its communication with the former startup server fails.

Configuration Examples The following example specifies the startup server 192.168.12.4 for the DHCP client.

```
next-server 192.168.12.4
```

Related Commands

Command	Description
bootfile	Defines the default startup mapping file name of the DHCP client.
ip dhcp pool	Defines the name of the DHCP address pool and enter the DHCP address pool configuration mode.
ip help-address	Defines the Helper address on the interface.
option	Configures the option of the RGOS software DHCP server.

Platform Description N/A

4.51 option

Use this command to configure the option of the DHCP server in the DHCP address pool

configuration mode. Use the **no** form of this command to restore the default setting.

option *code* { **ascii** *string* | **hex** *string* | **ip** *ip-address* }

no option

Parameter Description

Parameter	Description
code	Defines the DHCP option codes.
ascii *string*	Defines an ASCII string.
hex *string*	Defines a hex string.
ip *ip-address*	Defines an IP address list.

Defaults N/A

Command Mode Global configuration mode

Usage Guide The DHCP provides a mechanism to transmit the configuration information to the host in the TCP/IP network. The DHCP message has a variable option field that can be defined according to the actual requirement. The DHCP client needs to carry the DHCP message with 32 bytes of option information at least. Furthermore, the fixed data field in the DHCP message is also referred to as an option. For the definition of current DHCP option, refer to RFC 2131.

Configuration Examples The following example defines the option code 19, which determines whether the DHCP client can enable the IP packet forwarding. 0 indicates to disable the IP packet forwarding, and 1 indicates to enable the IP packet forwarding. The configuration below enable the IP packet forwarding on the DHCP client.

```
Ruijie(dhcp-config)# option 19 hex 1
```

The following example defines the option code 33, which provides the DHCP client with the static route information. The DHCP client will install two static routes: 1) the destination network 172.16.12.0 and the gateway 192.168.12.12, 2) the destination network 172.16.16.0 and the gateway 192.168.12.16.

```
option 33 ip 172.16.12.0 192.168.12.12 172.16.16.0 192.168.12.16
```

Related Commands

Command	Description
ip dhcp pool	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.

Platform Description N/A

4.52 pool-status

Use this command to enable or disable the DHCP address pool.

pool-status { **enable** | **disable** }

Parameter Description

Parameter	Description
enable	Enables the address pool.
disable	Disables the address pool.

Defaults By default, the address pool is enabled after it is configured.

Command Mode DHCP address pool configuration mode

Usage Guide This command is configured on the DHCP server.

Configuration Examples The following example disables the address pool.

```
Ruijie(dhcp-config)# pool-status disable
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.53 relay agent information

Use this command to enter the Option82 matching information configuration mode in the global CLASS configuration mode. Use the **no** form of this command to delete the Option82 matching information of the CLASS.

relay agent information

no relay agent information

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Global CLASS configuration mode

Usage Guide After executing this command, it enters the Option82 matching information configuration mode which is shown as “Ruijie (config-dhcp-class-relayinfo)#”.

In this configuration mode, user can configure the class matching multiple Option82 information.

Configuration Examples The following example configures a global CLASS and enters the Option82 matching information configuration mode.

```
Ruijie(config)# ip dhcp class myclass
Ruijie(config-dhcp-class)# relay agent information
Ruijie(config-dhcp-class-relayinfo)#
```

Related Commands

Command	Description
ip dhcp class	Defines a CLASS and enters the global CLASS configuration mode.

Platform Description N/A

4.54 relay-information hex

Use this command to enter the Option82 matching information configuration mode. Use the **no** form of this command to delete a piece of matching information.

relay-information hex *aabb.ccdd.eeff…* [*]

no relay-information hex *aabb.ccdd.eeff…* [*]

Parameter Description

Parameter	Description
aabb.ccdd.eeff…[*]	Hexadecimal Option82 matching information. The '*' symbol means partial matching which needs the front part matching only. Without the '*' means needing full matching.

Defaults N/A

Command Mode Global CLASS configuration mode

Usage Guide N/A

Configuration Examples The following example configures a global CLASS which can match multiple Option82 information.

```
Ruijie(config)# ip dhcp class myclass
Ruijie(config-dhcp-class)# relay agent information
Ruijie(config-dhcp-class-relayinfo)# relay-information
 hex 0102256535
Ruijie(config-dhcp-class-relayinfo)# relay-information
 hex 010225654565
Ruijie(config-dhcp-class-relayinfo)# relay-information
 hex 060225654565
Ruijie(config-dhcp-class-relayinfo)# relay-information
 hex 060223*
```

Related Commands	Command	Description
	ip dhcp class	Defines a CLASS and enter the global CLASS configuration mode.
	relay agent information	Enters the Option82 matching information configuration mode.

Platform Description N/A

4.55 remark

Use this command to configure the identification which is used to describe the CLASS in this global CLASS configuration mode. Use the **no** form of this command to delete the identification.

remark *class-remark*

no remark

Parameter Description	Parameter	Description
	class-remark	Information used to identify the CLASS, which can be the character strings with space in them.

Defaults N/A.

Command Mode Global CLASS configuration mode.

Usage Guide N/A

Configuration Examples The following example configures the identification information for a global CLASS.

```
Ruijie(config)# ip dhcp class myclass
Ruijie(config-dhcp-class)# remark used in #1 build
```

Related Commands	Command	Description
	ip dhcp class	Defines a CLASS and enter the global CLASS configuration mode.

Platform Description N/A

4.56 service dhcp

Use this command to enable the DHCP server and the DHCP relay on the device in global configuration mode. Use the **no** form of this command to restore the default setting.

service dhcp

no service dhcp

Parameter Description	Parameter	Description
	N/A	N/A

Defaults The **service dhcp** command is disabled.

Command Mode Global configuration mode

Usage Guide The DHCP server can assign the IP addresses to the clients automatically, and provide them with the network configuration information such as DNS server and default gateway. The DHCP relay can forward the DHCP requests to other servers, and the returned DHCP responses to the DHCP client, serving as the relay for DHCP packets.

Configuration Examples The following example enables the DHCP server and the DHCP relay feature.

```
service dhcp
```

Related Commands	Command	Description
	show ip dhcp server statistics	Displays various statistics information of the DHCP server.
	ip helper-address [**vrf**] *A.B.C.D*	Adds an IP address of the DHCP server.

Platform Description N/A

4.57 show dhcp lease

Use this command to display the lease information of the IP address obtained by the DHCP client.

show dhcp lease

Parameter Description	Parameter	Description
	N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide If the IP address is not defined, display the binding condition of all addresses. If the IP address is defined, display the binding condition of this IP address.

Configuration Examples The following example displays the result of the show dhcp lease.

```
Ruijie# show dhcp lease
Temp IP addr: 192.168.5.71 for peer on Interface: FastEthernet0/0
Temp sub net mask: 255.255.255.0
```

```
DHCP Lease server: 192.168.5.70, state: 3 Bound
DHCP transaction id: 168F
Lease: 600 secs, Renewal: 300 secs, Rebind: 525 secs
Temp default-gateway addr: 192.168.5.1
Next timer fires after: 00:04:29
Retry count: 0 Client-ID: redgaint-00d0.f8fb.5740-Fa0/0
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

4.58 show ip dhcp binding

Use this command to display the binding condition of the DHCP address.

show ip dhcp binding [*ip-address*]

Parameter Description	Parameter	Description
	ip-address	(Optional) Only displays the binding condition of the specified IP addresses.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide If the IP address is not defined, show the binding condition of all addresses. If the IP address is defined, show the binding condition of this IP address

Configuration Examples The following is the result of the show ip dhcp binding.

```
Ruijie# show ip dhcp binding
Total number of clients   : 4
Expired clients          : 3
Running clients          : 1

IP address       Hardware address      Lease expiration          Type
20.1.1.1         2000.0000.2011        000 days 23 hours 59 mins   Automatic
```

The meaning of various fields in the show result is described as follows.

Field	Description
IP address	The IP address to be assigned to the DHCP client.

Client-Identifier /Hardware address	The client identifier or hardware address of the DHCP client.
Lease expiration	The expiration date of the lease. The Infinite indicates it is not limited by the time. The IDLE indicates the address is in the free status currently for it is not renewed or the DHCP client releases it actively.
Type	The type of the address binding. The Automatic indicates an IP address is assigned automatically, and the Manual indicates an IP address is assigned by manual.

Related Commands

Command	Description
clear ip dhcp binding	Clears the DHCP address binding table.

Platform Description N/A

4.59 show ip dhcp conflict

Use this command to show the conflict history record of the DHCP sever.

show ip dhcp conflict

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide This command can display the conflict address list detected by the DHCP server.

Configuration Examples The following example displays the output result of the **show ip dhcp conflict** command.

```
Ruijie# show ip dhcp conflict
IP address  Detection Method
 192.168.12.1  Ping
```

The meaning of various fields in the show result is described as follows.

Field	Description
IP address	The IP addresses which cannot be assigned to the DHCP client.
Detection Method	The conflict detection method.

Related Commands	Command	Description
	clear ip dhcp conflict	Clears the DHCP conflict record.

Platform Description N/A

4.60 show ip dhcp history

Use this command to display the DHCP lease history.

show ip dhcp history

Parameter Description	Parameter	Description
	N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is configured on the DHCP server.

Configuration Examples The following example displays the DHCP lease history.

```
Ruijie#show ip dhcp history
Expired clients         : 3
IP address       Hardware address      Lease expiration          Vlan/Relay
10.1.1.5         2222.abcd.47ac        IDLE                      4097
10.1.1.4         2222.abcd.47ae        IDLE                      4097
10.1.1.3         2222.abcd.47ad        IDLE                      4097
Running clients         : 0
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

4.61 show ip dhcp pool

Use this command to display the address statistics of an address pool.

show ip dhcp pool [*poolname*]

Parameter Description	Parameter	Description
	poolname	(Optional) Address pool whose address statistics are to be displayed.

Defaults Privileged EXEC mode.

Command Mode N/A

Usage Guide Use this command to show the address statistics of an address pool.

Configuration Examples The following example displays the output result of the **show ip dhcp pool** *poolname* command.

```
Ruijie#show ip dhcp poolname
Pool poolname:
 Address range    192.168.0.1 - 192.168.0.254
 Class range     192.168.0.1 - 192.168.0.254
 Total address    252
Excluded   2
Distributed    30
Conflict     10
Remained     212
Usage percentage    84.12698%
Lease threshold    90%
```

The meaning of various fields in the show result is described as follows.

Field	Description
Address range	Address range of the address pool.
Class range	Class address range. By default, the address range for the same address pool is not configured. Otherwise, the class range is displayed.
Total address	Total number of addresses that can be assigned in the address pool.
Excluded	Number of excluded addresses.
Distributed	Number of assigned addresses.
Conflict	Number of conflicting addresses in the address pool.
Remained	Number of remaining addresses that have not been assigned or can be reused.
Usage percentage	Address pool usage.
Lease threshold	Lease threshold.

Related Commands

Command	Description
ip dhcp pool	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.

Platform Description N/A

4.62 show ip dhcp relay-statistics

Use this command to display the statistics of the DHCP relay.

show ip dhcp relay-statistics

Parameter Description	**Parameter**	**Description**
	N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to display the statistics of the DHCP relay.

Configuration Examples The following example displays the statistics of the DHCP relay.

```
Ruijie# show ip dhcp relay-statistics
Cycle mode              0

Message                 Count
Discover                0
Offer                   0
Request                 0
Ack                     0
Nak                     0
Decline                 0
Release                 0
Info                    0
Bad                     0

Direction               Count
Rx client               0
Rx client uni           0
Rx client bro           0
Tx client               0
Tx client uni           0
Tx client bro           0
Rx server               0
Tx server               0
```

The meaning of various fields in the show result is described as follows.

Field	Description
Cycle mode	Whether to allow packets to be sent to multiple DHCP servers.

Discover	The number of Discover packets.
Offer	The number of Offer packets.
Request	The number of Request packets.
Ack	The number of Ack packets.
Nak	The number of Nak packets.
Decline	The number of Decline packets.
Release	The number of Release packets.
Info	The number of Info packets.
Bad	The number of error packets.
Rx client	The number of packets received from the client.
Rx client uni	The number of unicast packets received from the client.
Rx client bro	The number of broadcast packets received from the client.
Tx client	The number of packets transmitted to the client.
Tx client uni	The number of unicast packets transmitted to the client
Tx client bro	The number of multicast packets transmitted to the client
Rx server	The number of packets received from the server.
Tx server	The number of packets transmitted to the server.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.63 show ip dhcp server statistics

Use this command to display the statistics of the DHCP server.

show ip dhcp server statistics

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command displays the statistics of the DHCP server.

Configuration Examples The following example displays the output result of the **show ip dhcp server statistics** command.

```
Ruijie# show ip dhcp server statistics
Address pools           2
Lease counter           4
Active  Lease Counter    0
Expired Lease Counter    4
Malformed messages       0
Dropped messages         0

Message                 Received
BOOTREQUEST           216
DHCPDISCOVER           33
DHCPREQUEST           25
DHCPDECLINE            0
DHCPRELEASE            1
DHCPINFORM            150

Message                   Sent
BOOTREPLY               16
DHCPOFFER               9
DHCPACK                  7
DHCPNAK                  0
DHCPREQTIMES             0
DHCPREQSUCTIMES         0
DISCOVER-PROCESS-ERROR 0
LEASE-IN-PINGSTATE       0
NO-LEASE-RESOURCE       0
SERVERID-NO-MATCH        0
---------------------------------------------
recv                       0
send                       0
```

The meaning of various fields in the show result is described as follows.

Field	Description
Address pools	Number of address pools.
Lease count	Number of allocated lease.
Automatic bindings	Number of automatic address bindings.
Manual bindings	Number of manual address bindings.
Expired bindings	Number of expired address bindings.

Malformed messages	Number of malformed messages received by the DHCP.
Message Received or Sent	Number of the messages received and sent by the DHCP server respectively.

Related Commands	Command	Description
	clear ip dhcp server statistics	Clears the DHCP server statistics.

Platform Description N/A

4.64 show ip dhcp socket

Use this command to display the socket used by the DHCP server.

show ip dhcp socket

Parameter Description	Parameter	Description
	N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the socket used by the DHCP server.

```
ruijie#show ip dhcp socket
dhcp socket = 47.
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

5 DHCPv6 Commands

5.1 bootfile-url

Use this command to configure the BOOT file URL of the DHCPv6 server. Use the **no** form of this command to remove the URL.

bootfile-url *url-string*

no bootfile-url

Parameter Description	**Parameter**	**Description**
	url-string	Sets URL of the BOOT file.

Defaults By default, no BOOT file URL is configured.

Command Mode DHCPv6 address pool configuration mode

Usage Guide Only the latest configured BOOT file URL is valid. New BOOT file URL overlays the old one.

Configuration Examples The following example configures the BOOT file URL.

```
Ruijie(config-dhcp)# bootfile-url tftp://1000::1/ruijie.py
```

Related Commands	**Command**	**Description**
	N/A	N/A

Platform Description N/A

5.2 clear ipv6 dhcp binding

Use this command to clear the DHCPv6 binding information.

clear ipv6 dhcp binding [*ipv6-address*]

Parameter Description	**Parameter**	**Description**
	ipv6-address	Sets the IPv6 address or the prefix.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide If the *ipv6-address* is not specified, all DHCPv6 binding information is cleared. If the *ipv6-address* is specified, the binding information for the specified address is cleared.

Configuration Examples The following example clears the DHCPv6 binding information:

```
Ruijie(config)# clear ipv6 dhcp binding
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.3 clear ipv6 dhcp client

Use this command to reset the DHCPv6 client.

clear ipv6 dhcp client*interface-type interface-number*

Parameter Description

Parameter	Description
interface-type interface-number	Sets the interface type and the interface number.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to reset the DHCPv6 client, which may lead the client to request for the configurations from the server again.

Configuration Examples The following example resets DHCP client VLAN 1.

```
Ruijie# clear ipv6 dhcp client vlan 1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.4 clear ipv6 dhcp conflict

Use this command to clear the DHCPv6 address conflicts.

clear ipv6 dhcp conflict { *ipv6-address* | *}

Parameter Description

Parameter	Description
ipv6-address	Specifies IPv6 address or prefix.
*	All IPv6 addresses or prefixes

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide If an IPv6 address conflict is detected, the DHCPv6 client will send the Decline message. Then the DHCPv6 server will add the address in this message into the address conflict queue. The addresses added into the address conflict queue cannot be assigned any longer.
If the * parameter is not specified, all conflicts of IPv6 addresses or prefixes will be deleted.
If the *ipv6-address* parameter is specified, only the specified address conflict will be deleted.

Configuration Examples The following example clears a DHCPv6 address conflict.

```
Ruijie# clear ipv6 dhcp conflict 2008:50::2
```

Related Commands

Command	Description
show ipv6 dhcp conflict	Displays address conflicts.

Platform Description N/A

5.5 clear ipv6 dhcp relay statistics

Use this command to clear the packet sending and receiving condition with the DHCPv6 Relay function enabled.
clear ipv6 dhcp relay statistics

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example clears the packet sending and receiving condition with the DHCPv6 Relay function enabled.

```
Ruijie# clear ipv6 dhcp relay statistics
```

Related Commands	Command	Description
	show ipv6 dhcp relay statistics	Displays the statistical information.

Platform Description N/A

5.6 clear ipv6 dhcp server statistics

Use this command to clear the DHCPv6 server statistics.

clear ipv6 dhcp server statistics

Parameter Description	Parameter	Description
	N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to clear the DHCPv6 server statistics.

Configuration Examples The following example clears the DHCPv6 server statistics.

```
Ruijie(config)# clear ipv6 dhcp server statistics
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

5.7 dns-server

Use this command to set the DNS Server list information for the DHCPv6 Server.

Use the **no** form of this command to restore the default setting.

dns-server *ipv6-address*

no dns-server *ipv6-address*

Parameter Description	Parameter	Description
	ipv6-address	Sets the IPv6 address or the DNS server.

Defaults By default, no DNS server list is configured.

Command Mode DHCPv6 pool configuration mode

Usage Guide To configure several DNS Server addresses, use the **dns-server** command for several times. The newly-configured DNS Server address will not overwrite the former ones.

Configuration Examples The following example configures the DNS server address.

```
Ruijie(config-dhcp)# dns-server 2008:1::1
```

Related Commands

Command	Description
domain-name	Sets the DHCPv6 domain name information.
ipv6 dhcp pool	Sets a DHCPv6 pool.

Platform Description N/A

5.8 domain-name

Use this command to set the domain name for the DHCPv6 server.

Use the **no** form of this command to restore thedefault setting.

domain-name*domain*

no domain-name *domain*

Parameter Description

Parameter	Description
domain	Sets the domain name.

Defaults By default, no domain name is configured.

Command Mode DHCPv6 pool configuration mode

Usage Guide To configure several domain names, use the domain-name command for several times. The newly-configured domain name will not overwrite the former ones.

Configuration Examples The following example sets the domain name for the DHCPv6 server to example.com.

```
Ruijie(config-dhcp)# domain-name example.com
```

Related Commands

Command	Description
dns-server	Sets the DHCPv6 DNS server list.
ipv6 dhcp pool	Sets the DHCPv6 pool.

Platform N/A

Description

5.9 iana-address prefix

Use this command to set the IA_NA address prefix for the DHCPv6 Server. Use the **no** form of this command to restore thedefault setting.

iana-address prefix *ipv6-prefix/prefix-length* [**lifetime** { *valid-lifetime* | *preferred-lifetime* }]

no iana-address prefix

Parameter Description

Parameter	Description
ipv6-prefix/prefix-length	Sets the IPv6 prefix and prefix length.
lifetime	Sets the lifetime of the address allocated to the client. With the keyword **lifetime** configured, both parameters *valid-lifetime*and*preferred-lifetime* shall be configured.
valid-lifetime	Sets the valid lifetime of using the allocated address for the client.
preferred-lifetime	Sets the preferred lifetime of the address allocated to the client.

Defaults By default, no IA_NA address prefix is configured.
The default *valid-lifetime* is 3600s(1 hour).
The default *preferred-lifetime is* 3600s(1 hour).

Command Mode DHCPv6 pool configuration mode

Usage Guide This command is used to set the IA_NA address prefix for the DHCPv6 Server, and allocate the IA_NA address to the client.
The Server attempts to allocate a usable address within the IA_NA address prefix range to the client upon receiving the IA_NA address request from the client. That address will be allocated to other clients if the client no longer uses that address again.

Configuration Examples The following example sets the IA_NA address prefix for the DHCPv6 Server.

```
Ruijie(config-dhcp)# iana-address prefix 2008:50::/64 lifetime 2000
1000Ruijie(config-if)# ip verify urpf drop-rate notify
```

Related Commands

Command	Description
ipv6 dhcp pool	Sets the DHCPv6 pool.
show ipv6 dhcp pool	Displays the DHCPv6 pool information.

Platform Description N/A

5.10 ipv6 dhcp client ia

Use this command to enable DHCPv6 client mode and request the IANA address from the DHCPv6 server. Use the **no** form of this command to restore the default setting.

ipv6 dhcp client ia [**rapid-commit**]

no ipv6 dhcp client ia

Parameter Description

Parameter	Description
rapid-commit	Allows the two-message interaction process.

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide This command is used to enable DHCPv6 client mode and request the IANA address from the DHCPv6 server,

The **rapid-commit** key allows the two-message interaction process between the client and the server. After the key is configured, the solicit message transmitted by the client contains the rapid-commit option.

Configuration Examples The following example enables the request for the IANA address on the interface.

```
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ipv6 dhcp client ia
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.11 ipv6 dhcp client pd

Use this command to enable the DHCPv6 client and request for the prefix address information.

Use the **no** form of this command to restore the default setting.

ipv6 dhcp client pd *prefix-name* [**rapid-commit**]

no ipv6 dhcp client pd

Parameter Description

Parameter	Description
prefix-name	Defines the IPv6 prefix name.
rapid-commit	Allows the two-message interaction process.

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide With the DHCPv6 client mode disabled, use this command to enable the DHCPv6 client mode on the interface.
With the **ipv6 dhcp client pd** command enabled, the DHCPv6 client sends the prefix request to the DHCPv6 server
The keyword **rapid-commit** allows the client and the server two-message interaction process. With this keyword configured, the solicit message sent by the client includes the **rapid-commit** item.

Configuration Examples The following example enables the prefix information request on the interface.

```
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ipv6 dhcp client pd pd_name
```

Related Commands

Command	Description
clear ipv6 dhcp client	Resets the DHCPv6 client function on the interface.
show ipv6 dhcp interface	Displays the DHCPv6 interface configuration.

Platform Description N/A

5.12 ipv6 dhcp pool

Use this command to set the DHCPv6 server pool.
Use the **no** form of this command to restore thedefault setting.
ipv6 dhcp pool *poolname*
no ipv6 dhcp pool *poolname*

Parameter Description

Parameter	Description
poolname	Defines the DHCPv6 pool name.

Defaults By default, no DHCPv6 server pool is configured.

Command Mode Global configuration mode

Usage Guide This command is used to create a DHCPv6 Server configuration pool. After configuring this command, it enters the DHCPv6 pool configuration mode, in which the administrator can set the pool parameters, such as the prefix and the DNS Server information, ect.
After creating the DHCPv6 Server configuration pool, use the **ipv6 dhcp server** command to associate the pool and the DHCPv6 Server on one interface.

Configuration Examples The following example sets the DHCPv6 server pool.

```
Ruijie# configure terminal
Ruijie(config)# ipv6 dhcp pool pool1
Ruijie(config-dhcp)#
```

Related Commands

Command	Description
ipv6 dhcp server	Enables the DHCPv6 server function on the interface.
show ipv6 dhcp pool	Displays the DHCPv6 pool information.

Platform Description N/A

5.13 ipv6 dhcp relay destination

Use this command to enable the DHCPv6 relay service and configure the destination address to which the messages are forwarded.

Use the **no** form of this command to restore the default setting.

ipv6 dhcp relay destination*ipv6-address* [*interface-type interface-number*]

no ipv6 dhcp relay destination*ipv6-address* [*interface-type interface-number*]

Parameter Description

Parameter	Description
ipv6-address	Sets the DHCPv6 relay destination address.
interface-type interface-number	Specifies the forwarding output interface if the forwarding address is the local link address.

Defaults By default, the relay and forward function is disabled, and the forwarding destination address and the output interface are not configured.

Command Mode Interface configuration mode

Usage Guide With the DHCPv6 relay service enabled on the interface, the DHCPv6 message received on the interface can be forwarded to all configured destination addresses. Those received DHCPv6 messages can be from the client, or from another DHCPv6 relay service.

The forwarding output interface configuration is mandatory if the forwarding address is the local link address or the multicast address. And the forwarding output interface configuration is optional if the forwarding address is global or station unicast or multicast address.

Without the forwarding output interface configured, the interface is selected according to the unicast or multicast routing protocol.

The relay reply message can be forwarded without the relay function enabled on the interface.

Configuration The following example sets the relay destination address on the interface.

Examples

```
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ipv6 dhcp relay destination 2008:1::1
```

Related Commands

Command	Description
show ipv6 dhcp interface	Displays the DHCPv6 interface information.

Platform Description N/A

5.14 ipv6 dhcp relay source

Use this command to specify the source interface of DHCPv6 Relay-Forward packets and add padding of interface information to the packets.

Use the **no** form of this command to restore the default setting.

ipv6 dhcp relay source {source-ip-address | gateway-address } { *ipv6 address* | *interface-type interface-number* }

no ipv6 dhcp relay source

Parameter Description

Parameter	Description
source-ip-address	Specifies the source IP address, and adds padding to the source IP field.
gateway-address	Specifies the gateway address, and adds padding to the source IP and link address fields.
ipv6-address	Specifies the IPv6 address of the source interface.
interface-type	Specifies the interface type of the source interface.
interface-number	Specifies the number of the source interface.

Defaults By default, no source interface is specified.

Command Mode Global configuration mode/Interface configuration mode

Usage Guide Enabling the functionality of specifying the source interface of DHCPv6 Relay-Forward packets changes the source IP address and link address fields of the DHCPv6 Relay-Forward packets. By specifying the source IP address, the source IP address of the DHCPv6 Relay-Forward packets is changed; by specifying the gateway address, the source IP address and the link address fields are changed.

This command can be run in both global configuration mode and interface configuration mode with configurations in interface configuration mode takes higher priority. When in the same mode, new configurations override the old ones.

⚠ The source address adopts the IPv6 format and cannot be a multicast address, a link-local address, a site address, the unspecified address (::), or the loopback address (::1).

⚠ When specifying a local interface as the source interface, make sure the local interface is a L3

interface. If it becomes a non-L3 interface, it is not the source interface any more.

If more than one IPv6 address is configured on the specified interface, the lowest global unicast address is selected as the IPv6 address of the interface. If no global unicast address is configured, the current configuration does not take effect and the packets are forwarded in the default way.

Configuration Examples

The following example specifies, in interface VLAN 1, the source interface of DHCPv6 Relay-Forward packets by choosing the gateway address as the source interface and configuring an IPv6 address.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# interface vlan 1
Ruijie(config-if)# ipv6 dhcp relay source gateway-address 1000::1
Ruijie(config-if)# end
```

The following example specifies, globally, the source interface of DHCPv6 Relay-Forward packets by choosing the source IP address as the source interface and configuring a local interface as the source interface.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# ipv6 dhcp relay source source-ip-address loopback 0
```

Related Commands

Command	Description
ipv6 dhcp pool	Sets the DHCPv6 pool.
show ipv6 dhcp pool	Displays the DHCPv6 pool information.

Platform Description

N/A

5.15 ipv6 dhcp server

Use this command to enable the DHCPv6 server on the interface.

Use the **no** form of this command to restore the default setting.

ipv6 dhcp server *poolname*[**rapid-commit**][**preference** *value*]

no ipv6 dhcp server

Parameter Description

Parameter	Description
poolname	Defines the DHCPv6 pool name.
rapid-commit	Allows the two-message interaction process.
preference *value*	Sets the preference level for the advertise message. The valid range is from 1 to 100 and the default value is 0.

Defaults

This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide Use the **ipv6 dhcp server** command to enable the DHCPv6 service.
Configuring the keyword **rapid-commit** allows the two-message interaction for the server and the client when allocating the address prefix and setting other configurations. With this keyword configured, if the client solicit message includes the **rapid-commit** item, the DHCPv6 Server will send the Reply message immediately.
DHCPv6 Server carries with the **preference** value when sending the advertise message if the **preference** level is not 0.
If the **preference** level is 0, the advertise message will not include this field. If the **preference** value is 255, the client sends the request message to the server to obtain the configurations.
DHCPv6 Client, Server and Relay functions are exclusive, and only one of the functions can be configured on the interface.

Configuration Examples The following example enables the DHCPv6 server on the interface.

```
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ipv6 dhcp server pool1
```

Related Commands

Command	Description
ipv6 dhcp pool	Sets the DHCPv6 pool.
show ipv6 dhcp pool	Displays the DHCPv6 pool information.

Platform Description N/A

5.16 ipv6 local pool

Use this command to configure the local prefix pool of the DHCPv6 server prefix.
Use the **no** form of this command to restore the default setting.
ipv6 local pool *poolname prefix/prefix-length assigned-length*
no ipv6 local pool *poolname*

Parameter Description

Parameter	Description
poolname	The local prefix pool name
prefix/prefix-length	The prefix and prefix length
assigned-length	The assigned prefix length

Defaults By default, no local prefix pool of the DHCPv6 server prefix is configured.

Command Mode Global configuration mode

Usage Guide The **ipv6 local pool** command is used to create the local prefix pool. If the DHCPv6 server requires prefix delegation, you can use the **prefix-delegation pool** command to specify the local prefix pool and then assign prefixes from the prefix pool.

Configuration Examples The following example configures the local prefix pool.

```
Ruijie(config)# ipv6 local pool client-prefix-pool 2001::db8::/64 80
```

The following example specifies the local prefix pool.

```
Ruijie(config-dhcp)# prefix-delegation pool client-prefix-pool lifetime 2000 1000
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.17 option52

Use this command to configure the DHCPv6 Server to set the CAPWAP AC IPv6 address.
Use the **no** form of this command to restore the default setting.
option52 *ipv6-address*
no option52 *ipv6-address*

Parameter Description

Parameter	Description
ipv6-address	Sets the CAPWAP AC IPv6 address.

Defaults By default, no option52 is created after pool configuration on the DHCPv6 server is complete.

Command Mode DHCPv6 pool configuration mode

Usage Guide This command can be used to set multiple CAPWAP AC IPv6 addresses. The newly added IPv6 address does not overwrite the old one.

Configuration Examples The following example configures thedomain-name address.

```
Ruijie(config-dhcp)# option52 2008:1::1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.18 prefix-delegation

Use this command to set the static binding address prefix information for the DHCPv6 server.
Use the **no** form of this command to restore the default setting.
prefix-delegation *ipv6-prefix/prefix-length client-DUID* [*lifetime*]
no prefix-delegation *ipv6-prefix/prefix-length client-DUID* [*lifetime*]

Parameter Description

Parameter	Description
ipv6-prefix/prefix-length	Sets the IPv6 address prefix and the prefix length.
client-DUID	Sets the client DUID.
lifetime	Sets the interval of using the prefix by the client.

Defaults By default, no address prefix information is configured.
The default*lifetime* is 3600 seconds (one hour).

Command Mode DHCPv6 pool configuration mode

Usage Guide The administrator uses this command to manually set the address prefix information list for the client IA_PD and set the valid lifetime for those prefixes.
The parameter *client-DUID* allocates the address prefix to the first IA_PD in the specified client.
Before receiving the request message for the address prefix from the client, DHCPv6 Server searches for the corresponding static binding first. If it succeeds, the server returns to the static binding; otherwise, the server will attempt to allocate the address prefix from other prefix information sources.

Configuration Examples

```
Ruijie(config-dhcp)# prefix-delegation 2008:2::/64 0003000100d0f82233ac
```

Related Commands

Command	Description
ipv6 dhcp pool	Sets a DHCPv6 pool.
ipv6 local pool	Sets a local prefix pool.
prefix-delegation pool	Specifies the DHCPv6 local prefix pool.
show ipv6 dhcp pool	Displays the DHCPv6 pool information.

Platform Description N/A

5.19 prefix-delegation pool

Use this command to specify the local prefix pool for the DHCPv6 server.
Use the **no** form of this command to restore the default setting.
prefix-delegation pool *poolname* [**lifetime** { *valid-lifetime* | *preferred-lifetime* }]

no prefix-delegation pool *poolname*

Parameter Description

Parameter	Description
poolname	Sets the local prefix pool name.
lifetime	Sets the lifetime of the address prefix allocated to the client. With the keyword **lifetime** configured, both parameters *valid-lifetime* and *preferred-lifetime* shall be configured.
valid-lifetime	Sets the valid lifetime of using the allocated address prefix for the client.
preferred-lifetime	Sets the preferred lifetime of the address prefix allocated to the client.

Defaults By default, no address prefix pool is specified.
The default *valid-lifetime* is 3600s(1 hour).
The default *preferred-lifetime is* 3600s(1 hour).

Command Mode DHCPv6 pool configuration mode

Usage Guide Use the **prefix-delegation pool** command to set the prefix pool for the DHCPv6 Server and allocate the prefix to the client. Use the **ipv6 local pool** command to set the prefix pool.
The Server attempts to allocate a usable prefix from the prefix pool to the client upon receiving the prefix request from the client. That prefix will be allocated to other clients if the client no longer uses that prefix again.

Configuration Examples The following example specifies the local prefix pool for the DHCPv6 server.

```
Ruijie(config-dhcp)# prefix-delegation pool client-prefix-pool lifetime 2000 1000
```

Related Commands

Command	Description
ipv6 dhcp pool	Sets a DHCPv6 pool.
ipv6 local pool	Sets a local prefix pool.
prefix-delegation	Statically binds the client with the address prefix.
show ipv6 dhcp pool	Displays the DHCPv6 pool information.

Platform Description N/A

5.20 show ipv6 dhcp

Use this command to display the device DUID.

show ipv6 dhcp

Parameter

Parameter	Description

Description	N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode/Interface configuration mode/Global configuration mode

Usage Guide The server, client and relay on the same device share a DUID.

Configuration Examples The following example displays the device DUID.

```
Ruijie# show ipv6 dhcp
This device's DHCPv6 unique identifier(DUID): 00:03:00:01:00:d0:f8:22:33:b0
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

5.21 show ipv6 dhcp binding

Use this command to display the address binding information for the DHCPv6 server.

show ipv6 dhcp binding [*ipv6-address*]

Parameter Description	Parameter	Description
	ipv6-address	Sets the IPv6 address or the prefix.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide If the *ipv6-address* is not specified, all prefixes dynamically assigned to the client and IANA address binding information are shown. If the *ipv6-address* is specified, the binding information for the specified address is shown.

Configuration Examples The following example displays the address binding information for the DHCPv6 server.

```
Ruijie# show ipv6 dhcp binding
Client  DUID: 00:03:00:01:00:d0:f8:22:33:ac
  IAPD: iaid 0, T1 1800, T2 2880
    Prefix: 2001:20::/72
           preferred lifetime 3600, valid lifetime 3600
        expires at Jan 1 2008 2:23 (3600 seconds)
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

5.22 show ipv6 dhcp conflict

Use this command to display the DHCPv6 address conflicts.

show ipv6 dhcp conflict

Parameter Description	Parameter	Description
	N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the DHCPv6 address conflicts.

```
Ruijie# show ipv6 dhcp conflict
2008:50::2   declined
2108:50::2   declined
2008:50::3   declined
2008:50::4   declined
2108:50::4   declined
2008:50::5   declined
```

Related Commands	Command	Description
	clear ipv6 dhcp conflict	Clears address conflicts.

Platform Description N/A

5.23 show ipv6 dhcp interface

Use this command to display the DHCPv6 interface information.

show ipv6 dhcp interface [*interface-name*]

Parameter	Parameter	Description

Description	*interface-name*	Sets the interface name.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide If the *interface-name* is not specified, all DHCPv6 interface information isdisplayed. If the *interface-name* is specified, the specified interface information is displayed.

Configuration Examples The following example displays the DHCPv6 interface information.

```
Ruijie# show ipv6 dhcp interface
VLAN 1 is in server mode
  Server pool dhcp-pool
  Rapid-Commit: disable
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

5.24 show ipv6 dhcp pool

Use this command to display the DHCPv6 pool information.

show ipv6 dhcp pool [*poolname*]

Parameter Description	Parameter	Description
	poolname	Defines the DHCPv6 pool name.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide If the *poolname* is not specified, all DHCPv6 interface information isdisplayed. If the *poolname* is specified, the specified interface information is displayed.

Configuration Examples The following example displays the DHCPv6 pool information.

```
Ruijie# show ipv6 dhcp pool
DHCPv6 pool: dhcp-pool
  DNS server: 2011:1::1
  DNS server: 2011:1::2
```

```
Domain name: example.com
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

5.25 show ipv6 dhcp relay agent

Use this command to display the source interface information about DHCPv6 Relay Agent.

show ipv6 dhcp relay agent [*X:X:X:X::X* | *]

Parameter Description	Parameter	Description
	X:X:X:X::X	Displays source interface information about a specified link.
	*	Displays source interface information about all links.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Use this command to show source interface information and link addresses of request packets received by the DHCPv6 Relay Agent.

Configuration Examples The following example displays all source interface information and their corresponding links.

```
Ruijie# show ipv6 dhcp relay agent *
Link local address          l2 interface
--------------------------------------------
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

5.26 show ipv6 dhcp relay destination

Use this command to display the destination information about DHCPv6 Relay Agent.

show ipv6 dhcp relay destination

Parameter description	Parameter	Description
	all	Displays information about all configured destination addresses and

	relay exits.
interface*interface-type interface-number*	Displaysthe relay destination address and relay exit configured for a specified interface.

Defaults N/A

Command mode Privileged EXEC mode

Usage guideline Use this command to show the relay destination address to which DHCPv6 packets sent from a client are forwarded through a specified relay exit (optional) by an interface for which the relay function has been enabled by Relay Agent.

Examples The following example displays all the relay destination addresses.

```
Ruijie# show ipv6 dhcp relay destination all
Interface: Vlan1   //interface for which the relay function has been enabled
Destination address(es)                    Output Interface
3001::2
FF02::1:2     //specified destination address          Vlan2   //specified
relay exit
```

Related commands	**Command**	**Description**
	N/A	N/A

Platform description N/A

5.27 show ipv6 dhcp relay source

Use this command to display the specified source interface of DHCPv6 Relay packets and its configuration information.

show ipv6 dhcp relay source

Parameter Description	**Parameter**	**Description**
	N/A.	N/A.

Defaults N/A.

Command Mode Privileged EXEC mode

Usage Guide N/A.

Configuration Examples The following example displays the specified source interface of DHCPv6 Relay packets and its configuration information.

```
Ruijie#show ipv6 dhcp relay source
Interface-Name          Source-Intf-Type      Source-Intf-Parameter
-------------------------------------------------------------------
Global                 Source Address        VLAN 10
VLAN 1                 Gateway Address       1000::1
TenGigabitEthernet 0/7   Source Address        3000::1:1
```

Field interpretation:

Field	Interpretation
Interface-Name	Name of the specified source interface. In global configuration mode, “Global” is displayed in this column.
Source-Intf-Type	Type of the source interface.
Source-Intf-Parameter	Parameters of the source interface.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.28 show ipv6 dhcp relay statistics

Use this command to display the packet sending and receiving condition with the DHCPv6 Relay function enabled.

show ipv6 dhcp relay statistics

Parameter Description

Parameter	Description
N/A.	N/A.

Defaults N/A.

Command Mode Privileged EXEC mode

Usage Guide N/A.

Configuration Examples The following example displays the packet sending and receiving condition with the DHCPv6 Relay function enabled.

```
Ruijie# show ipv6 dhcp relay statistics
Packets dropped             :  2
   Error                   :  2
   Excess of rate limit     :  0
Packets received            :  28
   SOLICIT                 :  0
   REQUEST                 :  0
   CONFIRM                 :  0
   RENEW                   :  0
   REBIND                  :  0
   RELEASE                 :  0
   DECLINE                 :  0
   INFORMATION-REQUEST      :  14
   RELAY-FORWARD           :  0
   RELAY-REPLY             :  14
Packets sent                :  16
   ADVERTISE               :  0
   RECONFIGURE             :  0
   REPLY                   :  8
   RELAY-FORWARD           :  8
 RELAY-REPLY             :  0
```

Related Commands

Command	Description
clear ipv6 dhcp relay statistics	Clears the statistical information.

Platform Description N/A

5.29 show ipv6 dhcp server statistics

Use this command to display the DHCPv6 server statistics.

show ipv6 dhcp server statistics

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to display the DHCPv6 server statistics.

Configuration Examples The following example displays the DHCPv6 server statistics.

```
Ruijie# show ipv6 dhcp server statistics
DHCPv6 server statistics:

Packet statistics:
DHCPv6 packets received:          7
Solicit received:                 7
Request received:                 0
Confirm received:                 0
Renew received:                   0
Rebind received:                  0
Release received:                 0
Decline received:                 0
Relay-forward received:           0
Information-request received:     0
Unknown message type received:    0
Error message received:           0

DHCPv6 packet sent:               0
Advertise sent:                   0
Reply sent:                       0
Relay-reply sent:                 0
Send reply error:                 0
Send packet error:                0

Binding statistics:
Bindings generated:               0
IAPD assigned:                    0
IANA assigned:                    0

Configuration statistics:
DHCPv6 server interface:          1
DHCPv6 pool:                      0
DHCPv6 iapd binding:              0
```

Related Commands

Command	Description
ipv6 dhcp pool	Sets a DHCPv6 pool.

Platform Description N/A

5.30 show ipv6 local pool

Use this command to display the local prefix pool configuration and usage.

show ipv6 local pool [*poolname*]

Parameter Description

Parameter	Description
poolname	The local prefix pool name

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to display the local prefix pool configuration and usage.

Configuration Examples The following example displays all local prefix pool information.

```
Ruijie#show ipv6 local pool
Pool                        Prefix
Free          In use
client-prefix-pool             2001:db8::/64
65536          0
```

Field	Description
Pool	The local address pool name.
Prefix	The prefix and prefix length.
Free	The available prefix.
In use	The prefix in use.

The following example displays the information about the specified local prefix pool.

```
Ruijie#show ipv6 local pool client-prefix-pool
Prefix is 2001:db8::/64 assign /80 prefix
1 entries in use, 65535 available
Prefix                                                Interface
2001:db8::/80                                          GigabitEthernet 0/0
```

Filed	Description
Prefix	The assigned prefix and prefix length.
Interface	The assigning interface.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6 DNS Commands

6.1 clear host

Use this command to clear the dynamically learned host name.

clear host [* | *host-name*]

Parameter Description

Parameter	Description
host-name	Deletes the specified dynamic domain name buffer.
*	Deletes all dynamic domain name buffer.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide You can obtain the mapping record of the host name buffer table in two ways: 1) the **ip host** static configuration, 2) the DNS dynamic learning. Execute this command to delete the host name records learned by the DNS dynamically.

Configuration Examples The following configuration deletes the dynamically learned mapping records from the host name-IP address buffer table.

```
Ruijie(config)#clear host *
```

Related Commands

Command	Description
show hosts	Displays the host name buffer table.

Platform Description N/A

6.2 ip domain-lookup

Use this command to enable DNS domain name resolution and configure the source IP address of DNS query.

ip domain-lookup [**oob** [**via** *mgmt-name*] | **vrf** *vrf-name*] **[source {** *interface* **| ip** *ip-address* **]**

Use this command to disable DNS domain name resolution or disable DNS domain name resolution and remove the configured source IP address for DNS query.

no ip domain-lookup [**oob** [**via** *mgmt-name*] | **vrf** *vrf-name*]

Use this command to enable DNS domain name resolution and remove the configured source IP address for DNS query.
default ip domain-lookup [**oob** [**via** *mgmt-name*] | **vrf** *vrf-name*]

Use either of the commands to remove the configured source IP address for DNS query.
no ip domain-lookup [**oob** [**via** *mgmt-name*] | **vrf** *vrf-name*] **source**
default ip domain-lookup [**oob** [**via** *mgmt-name*] | **vrf** *vrf-name*] **source**

Parameter Description

Parameter	Description
vrf *vrf-name*	Specifies the name of a VRF instance. If this parameter is not specified, it indicates the public network.
oob	Enables the out-band channel. It must be set when MGMT is specified as the source port.
via	Configures MGMT port.
mgmt-name	Specifies the MGMT port in **oob** mode.
source	Indicates the interface or source address for domain name resolution.
interface	Specifies a Layer 3 interface.
ip-address	Specifies the IPv4 address of the DNS server.

Defaults By default, DNS domain name resolution is enabled while no source interface or address is configured for DNS query.

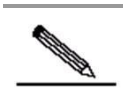
Command Mode Global configuration mode.

Usage Guide By default, no source IP address of DNS query is configured, so the source IP address of DNS query is decided through the routing process.

If the *interface* parameter is specified, when IPv4 DNS query is sent, its source address is the prime IPv4 address of the source interface; when IPv6 DNS query is sent, its source address is the first effective IPv6 address of the source interface. If no such IPv4 IPv6 addresses are configured on the interface, corresponding DNS query cannot be sent.

If the **ipv4** *ip-address* field is specified, the configured IPv4 address serves as the source address of IPv4 DNS query, and the sending of IPv6 DNS query fails.

If the **ipv6** *ip-address* field is specified, the configured IPv6 address serves as the source address of IPv6 DNS query, and the sending of IPv4 DNS query fails.


Note An effective IPv6 address is a unicast address. But it cannot be a link local address or a

loopback address.

Configuration Examples The following example disables the DNS domain name resolution.

```
Ruijie(config)# no ip domain-lookup
```

Related Commands

Command	Description
show hosts	Displays the DNS related configuration information.

Platform Description N/A

6.3 ip host

Use this command to configure the mapping of the host name and the IP address. Use the **no** form of the command to remove the host list.

ip host [**oob** | **vrf** *vrf-name*] *host-name ip-address* [**via** *mgmt-name*]

no ip host [**oob** | **vrf** *vrf-name*] *host*-name *ip-address* [**via** *mgmt-name*]

Parameter Description

Parameter	Description
vrf *vrf-name*	Specifies the name of a VRF instance. If this parameter is not specified, it indicates the public network.
oob	Enables the out-band channel. It must be set when MGMT is specified as the source port.
via	Configures MGMT port.
mgmt-name	Specifies the MGMT port in **oob** mode.
host-name	Specifies the host name of the equipment.
ip-address	Specifies the IP address of the equipment.

Defaults N/A

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example configures IPv4 address 192.168.5.243 for domain name www .test.com.

```
Ruijie(config)# ip host www.test.com 192.168.5.243
```

Related Commands

Command	Description

show hosts	Show the DNS related configuration information.

Platform Description N/A

6.4 ip name-server

Use this command to configure the IP address of the domain name server. Use the **no** form of this command to delete the configured domain name server.

ip name-server [**oob** | **vrf** *vrf-name*] { *ip-address* } [**via** *mgmt-name*]

no ip name-server [**oob** | **vrf** *vrf-name*] { *ip-address* } [**via** *mgmt-name*]

Parameter Description

Parameter	Description
oob	Enables the out-band channel. It must be set when MGMT is specified as the source port.
vrf *vrf-name*	Specifies the name of a VRF instance. If this parameter is not specified, it indicates the public network.
ip-address	The IP address of the domain name server.
via	Configures MGMT port.
mgmt-name	Specifies the MGMT port in **oob** mode.

Defaults N/A

Command Mode Global configuration mode.

Usage Guide Add the IP address of the DNS server. Once this command is executed, the equipment will add a DNS server. When the device cannot obtain the domain name from a DNS server, it will attempt to send the DNS request to subsequent servers until it receives a response.

Up to 6 DNS servers are supported. You can delete a DNS server with the *ip-address* option or all the DNS servers.

Configuration Examples The following example configures the IPv4 domain name server.

```
Ruijie(config)# ip name-server 192.168.5.134 via mgmt 2/0
```

Related Commands

Command	Description
show hosts	Displays the DNS related configuration information.

Platform N/A

Description

6.5 show hosts

Use this command to display DNS configuration.

show hosts [**oob** [**via** *mgmt-name***]** | **vrf** *vrf-name*] [*hostname*]

Parameter Description

Parameter	Description
vrf *vrf-name*	Specifies the name of a VRF instance. If this parameter is not specified, it indicates the public network.
oob	Enables the out-band channel. It must be set when MGMT is specified as the source port.
via	Configures MGMT port.
mgmt-name	Specifies the MGMT port in **oob** mode.
hostname	Displays the specified domain name information,

Defaults All domain name information is displayed by default.

Command Mode Privileged EXEC mode.

Usage Guide This command is used to display the DNS related configuration information.

Configuration Examples

```
Ruijie# show hosts
Name servers are:
192.168.5.134 static

Host             type         Address             TTL(sec)
switch           static       192.168.5.243          ---
www.ruijie.com   dynamic      192.168.5.123          126
```

Field	Description
Name servers	Domain name server
Host	Domain name
type	Resolution type: Static resolution and dynamic resolution.
Address	IP address corresponding to the domain name
TTL	TTL of entries corresponding to the domain name/IP address.

Related Commands

Command	Description
ip host	Configures the host name and IP address

	mapping by manual.
ipv6 host	Configures the host name and IPv6 address mapping by manual.
ip name-server	Configures the DNS server.

Platform Description N/A

7 FTP Server Commands

7.1 ftp-server enable

Use this command to enable the FTP server. Use the **default** form of this command to restore the default setting.

ftp-server enable

default ftp-server enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide This command is used to enable the FTP server to connect the FTP client to upload/download the files.

> To enable the FTP client to access to the FTP server files, this command shall be co-used with the **ftp-server topdir** command.

Configuration Examples The following example enables the FTP Server and confines the FTP client access to the syslog subdirectory:

```
Ruijie(config)# ftp-server topdir /syslog
```

Ruijie(config)# ftp-server enableThe following example disables the FTP Server:

```
Ruijie(config)# no ftp-server enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.2 ftp-server login timeout

Use this command to set the timeout interval for login to the FTP server. Use the **no** or **default** form

of this command to restore the default setting.

ftp-server login timeout *time*

no ftp-server login timeout

default ftp-server login timeout

Parameter Description

Parameter	Description
time	Sets the timeout interval for login to the FTP server, in the range from 1 to 30 in the unit of minutes.

Defaults The default is 2 minutes.

Command Mode Global configuration mode

Usage Guide The timeout interval refers to the maximum time when your account is allowed online after you login to the server. If you don't perform authentication again before the timeout interval expires, you will be forced offline.

Configuration Examples The following example sets the timeout interval for login to the FTP server to 5 minutes.

```
Ruijie(config)# ftp-server login timeout 5
```

The following example restores the default setting.

```
Ruijie(config)# no ftp-server login timeout
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.3 ftp-server login times

Use this command to set the number of login attempts. Use the **no** or **default** form of this command to restore the default setting.

ftp-server login times *time*

no ftp-server login times

default ftp-server login times

Parameter Description

Parameter	Description
time	Sets the number of login attempts, in the range from 1 to 10.

Defaults The default is 3.

Command Mode Global configuration mode

Usage Guide The number of login attempts refers to the maximum count you are allowed to perform authentication. If the number of your login attempts exceeds 3, you will be forced offline.

Configuration Examples The following example sets the number of login attempts to 5.

```
Ruijie(config)# ftp-server login times 5
```

The following example restores the default setting.

```
Ruijie(config)# no ftp-server login times
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.4 ftp-server topdir

Use this command to set the directory range for the FTP client to access to the FTP server files. Use the **no** form of this command to restore the default setting.

ftp-server topdir *directory*

no ftp-server topdir

Parameter Description

Parameter	Description
directory	Sets the top-directory.

Defaults No top-directory is configured by default.

Command Mode Global configuration mode.

Usage Guide The FTP server top directory specifies the directory range of the files accessed by the client. Can the FTP client accesses to the files on the FTP server with the top directory correctly specified.
Without this command configured, FTP client fails to access to any file or directory on the FTP server.

Configuration Examples The following example enables the FTP Server and confines the FTP client access to the syslog subdirectory.

```
Ruijie(config)# ftp-server topdir /syslog
Ruijie(config)# ftp-server enable
```

The following example restores the default setting.

```
Ruijie(config)# no ftp-server topdir
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.5 ftp-server timeout

Use this command to set the FTP session idle timeout. Use the **no** form of this command to restore the default setting.

ftp-server timeout *time*

no ftp-server timeout

Parameter Description

Parameter	Description
time	Sets the session idle timeout, in the range from 1 to 3600 in the unit of minutes.

Defaults The default is 10 minutes.

Command Mode Global configuration mode.

Usage Guide Use this command to set the FTP session idle timeout. If the session is idle, the FTP server deems the session connection is invalid and disconnects with the user.

The session idle time refers to the time for the FTP session between two FTP operations

Configuration Examples The following example sets the session idle timeout to 5 mimutes:

```
Ruijie(config)# ftp-server timeout 5
```

The following example restores the default setting.

```
Ruijie(config)# no ftp-server timeout
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.6 ftp-server username password

Use this command to set the login username and password for the FTP server. Use the **no** form of this command to restore the default setting.

ftp-server username *username* **password** [*type*] *password*

no ftp-server username *username*

default ftp-server username *username*

Parameter Description

Parameter	Description
username	Sets the login username.
password	Sets the log password

Defaults No username or password is set by default.

Command Mode Global configuration mode

Usage Guide Use this command to set the login username for the FTP server. To log in to the FTP server, the correct username and password shall be provided.

The maximum length of the username is 64 characters and the spaces are not allowed in the middle of the username. The username consists of letters, semiangle number and semiangle mark. Up to tn usernames can be configured for the FTP server at most.

The password must contain letters or numbers. Spaces before or behind the password are allowed but will be ignored. The spaces within are part of the password.

The plaintext password is in the range from 1 to 25 characters. The encrypted password is in the range from 4 to 52 characters.

The anonymous user login is not supported on the FTP server. The client fails to pass the identity verification if the username is removed.

Configuration Examples The following example sets the username to user:

```
Ruijie(config)# ftp-server username user password pass
```

The following example restores the default setting:

```
Ruijie(config)# no ftp-server username user
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.7 ftp-server authentication

Use this command to specify an AAA method on the FTP server. Use the **no** or **default** form of this command to restore the default setting.

ftp-server authentication {default | *username* **}**

no ftp-server authentication

default ftp-server authentication

Parameter Description

Parameter	Description
default	Specifies the default AAA method.
username	Enters an AAA method name.

Defaults The default AAA method is used if no method is specified.

Command Mode Global configuration mode

Usage Guide Run this command to specify an AAA method that applies to clients logging in the FTP server.

Configuration Examples The following example enables the AAA method named 1111:

```
Ruijie(config)# ftp-server authentication 1111
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.8 show ftp-server

Use this command to show the status information of the FTP server.

show ftp-server

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide The FTP server status information includes:

- Enabled/Disabled server
- The control connection is set up or not (the related IP, Port are shown)
- The data connection is set up or not (the related IP, Port and the working mode are shown)
- The current file transmission type
- The login username and password
- The FTP server top directory
- The session idle timeout setting

Configuration Examples The following example displays the related status information of the FTP server:

```
Ruijie#show ftp-server
   ftp-server information
==================================
enable : Y
topdir : tmp:/
timeout: 10min
username:aaaa        password:(PLAINT)bbbb        connect num[2]
   [0]trans-type:BINARY (ctrl)server IP:192.168.21.100[21]
                         client IP:192.168.21.26[3927]
   [1]trans-type:ASCII (ctrl)server IP:192.168.21.100[21]
                         client IP:192.168.21.26[3929]
username:a1          password:(PLAINT)bbbb        connect num[0]
username:a2          password:(PLAINT)bbbb        connect num[0]
username:a3          password:(PLAINT)bbbb        connect num[0]
username:a4          password:(PLAINT)bbbb        connect num[0]
username:a5          password:(PLAINT)bbbb        connect num[0]
username:a6          password:(PLAINT)bbbb        connect num[0]
username:a7          password:(PLAINT)bbbb        connect num[0]
username:a8          password:(PLAINT)bbbb        connect num[0]
username:a9          password:(PLAINT)bbbb        connect num[0]
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

8 FTP CLIENT Commands

8.1 default ftp-client

Use this command to restore the FTP Client default setting.

default ftp-client [**vrf** *vrf-name*]

Parameter Description

Parameter	Description
vrf *vrf-name*	VRF name. The default is the public network instance.

Defaults N/A

Command Mode Global configuration mode.

Usage Guide This command is used to restore FTP Client default setting. Specifically, data connection is passive; file transfer is binary; the client source IP address is not bound.

Configuration Examples The following example restores FTP Client default setting.

```
Ruijie(config)# default ftp-client
```

The following example restores FTP Client *vrf-name* default setting.

```
Ruijie(config)# default ftp-client vrf vrf-name
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

8.2 ftp-client disable-size-check

Use this command to disable size check of files downloaded from an FTP server. Use the **no** or **default** form of this command to restore the default setting.

ftp-client disable-size-check

no ftp-client disable-size-check

default ftp-client disable-size-check

Parameter

Parameter	Description

Description

N/A	N/A

Defaults By default, file size is checked when it is downloaded from an FTP server.

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example disables size check of files.

```
Ruijie(config)# ftp-client disable-size-check
```

The following example enables size check of files.

```
Ruijie(config)# no ftp-client disable-size-check
```

The following example restores the default setting.

```
Ruijie(config)# default ftp-client disable-size-check
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

8.3 ftp-client ascii

Use this command to use ASCII mode for FTP transfer.

Use the **no** form of this command to restore the default setting.

ftp-client [**vrf** *vrfname*] **ascii**

no ftp-client [**vrf** *vrfname*] **ascii**

default ftp-client [**vrf** *vrf-name*]

Parameter Description

Parameter	Description
vrf *vrf-name*	Configures the file transfer mode for the specified VRF.

Defaults The default FTP transfer mode is binary.

Command Mode Global configuration mode

Usage Guide The **default** command is used to restore the FTP client setting. Specifically, data connection is in PASV mode and file transfer BINARY. The client source IP address is not bound.

Configuration Examples

The following example configures ASCII FTP transfer.

```
Ruijie (config)# ftp-client ascii
```

The following example configures ASCII FTP transfer for *vrf-name*.

```
Ruijie(config)# ftp-client vrf vrf-name ascii
```

The following example configures binary FTP transfer.

```
Ruijie(config)# no ftp-client ascii
```

The following example configures binary FTP transfer for *vrf-name*.

```
Ruijie(config)# no ftp-client vrf vrf-name ascii
```

The following example restores the default setting of the FTP Client.

```
Ruijie(config)# default ftp-client
```

The following example restores the default setting of the FTP Client vrf-name,

```
Ruijie(config)# default ftp-client vrf vrf-name
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

8.4 ftp-client port

Use this command to configure PORT mode used for FTP data connection. Use the **no** form of this command to restore the default setting.

ftp-client [**vrf** *vrfname*] **port**

no ftp-client [**vrf** *vrfname*] **port**

default ftp-client [**vrf** *vrf-name*]

Parameter Description

Parameter	Description
vrf *vrf-name*	VRF name The default is the public network instance.

Defaults The default is PASV mode for FTP data connection.

Command Mode Global configuration mode.

Usage Guide This command is used to configure the connection mode to PORT mode, in which the server will actively connect with the client.

The **default** command is used to restore the FTP client setting. Specifically, data connection is in PASV mode and file transfer BINARY. The client source IP address is not bound.

Configuration The following example configures PORT mode used for FTP data connection

Examples

```
Ruijie (config)# ftp-client port
```

The following example configures PORT mode used for FTP*vrf-name* data connection.

```
Ruijie(config)# ftp-client vrf vrf-name port
```

The following example configures PASV mode for FTP data connection.

```
Ruijie(config)# no ftp-client port
```

The following example configures PASV mode used for FTP*vrf-name* data connection.

```
Ruijie(config)# no ftp-client vrf vrf-name port
```

The following example restores the default setting of the FTP Client.

```
Ruijie(config)# default ftp-client
```

The following example restores the default setting of the FTP Client vrf-name,

```
Ruijie(config)# default ftp-client vrf vrf-name
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

8.5 ftp-client source-address

Use this command to bind FTP Client with the source IP address of client and use this IP address to communicate with server. Use the **no** form of this command to disable source IP address binding. Use the **default** form of this command to restore the default setting.

ftp-client [**vrf** *vrfname*] **source-address** { *ip-address* | *ipv6-address* }

no ftp-client [**vrf** *vrfname*] **source-address**

default ftp-client [**vrf** *vrf-name*]

Parameter Description

Parameter	Description
vrf *vrf-name*	VRF name. The default is the public network instance.
ip-address	IP address of FTP client.
ipv6-address	IPv6 address of FTP client.

Defaults By default, the client will not bind the IP address locally. Instead, the router will select the IP address.

Command Mode Global configuration mode

Usage Guide The **default** command is used to restore the FTP client setting. Specifically, data connection is in PASV mode and file transfer BINARY. The client source IP address is not bound.

Configuration The following example binds FTP Client with source IP address 192.168.23.236.

Examples

```
Ruijie (config)# ftp-client source-address 192.168.23.236
```

The following example binds FTP Client with source IP address 2003:0:0:0::2.

```
Ruijie(config)# ftp-client source-address 2003:0:0:0::2
```

The following example binds FTP Client *vrf-name* with source IP address 192.168.23.236.

```
Ruijie(config)# ftp-client vrf vrf-name source-address 192.168.23.236
```

The following example binds FTP Client *vrf-name* with source IP address 2003:0:0:0::2.

```
Ruijie(config)# ftp-client vrf vrf-name source-address 2003:0:0:0::2
```

The following example disables source IP address binding.

```
Ruijie(config)# no ftp-client source-address
```

The following example disables source IP address binding.

```
Ruijie(config)# no ftp-client vrf vrf-name source-address
```

The following example restores the default setting of the FTP Client.

```
Ruijie(config)# default ftp-client
```

The following example restores the default setting of the FTP Client vrf-name,

```
Ruijie(config)# default ftp-client vrf vrf-name
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

8.6 copy ftp

Use this command to download the file from the server to the device through FTP Client.

copy ftp://*username:password@dest-address* [/*remote-directory*] / *remote-file*

flash:[*local-directory*/] *local-file*]

Parameter Description

Parameter	Description
username	The username for logging into FTP Server. It is limited to 40 bytes and must not contain ":", "@", "/" and space, neither can it be omitted.
password	The password for logging into FTP Server. It is limited to 32 bytes and must not contain ":", "@", "/" and space, neither can it be omitted.
dest-address	IP address of the target FTP Server.
remote-directory	File directory of FTP Server. It is optional and limited to 255 bytes. No space or Chinese character is supported. If left blank, it implies the current directory of FTP server.
remote-file	Filename on the remote server. It is limited to 255 bytes and doesn't support space or Chinese character.
local-directory	Directory of local folder (optional). If this directory is specified, this directory must have been created beforehand. This command doesn't support automatic directory creation. If left blank, it implies the current directory on the local device. It is limited to 255 bytes and doesn't support space or Chinese characters.
local-file	Filename on the local device. It is limited to 255 bytes and doesn't support space or Chinese character.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example uses username of "user" and password of "pass" to download a file named "remote-file" from the directory "root" on FTP Server with IP address 192.168.23.69 to directory "home" on the local device, and changes the name to "local-file".

```
Ruijie# copy ftp://user:pass@192.168.23.69/root/remote-file
flash:home/local-file
```

Related

Command	Description

Commands

copy tftp	Uses the TFTP protocol to transfer files.

Platform Description N/A

8.7 copy flash

Use this command to upload the file from the server to the device through FTP Client.

copy flash:[*local-directory/*] *local-file* **ftp:**//*username:password@dest-address* [/*remote-directory*] /*remote-file*

Parameter Description

Parameter	Description
username	The username for logging into FTP Server. It is limited to 40 bytes and must not contain ":", "@", "/" and space, neither can it be omitted.
password	The password for logging into FTP Server. It is limited to 32 bytes and must not contain ":", "@", "/" and space, neither can it be omitted.
dest-address	IP address of the target FTP Server.
remote-directory	File directory of FTP Server. It is optional and limited to 255 bytes. No space or Chinese character is supported. If left blank, it implies the current directory of FTP server.
remote-file	Filename on the remote server. It is limited to 255 bytes and doesn't support space or Chinese character.
local-directory	Directory of local folder (optional). If this directory is specified, this directory must have been created beforehand. This command doesn't support automatic directory creation. If left blank, it implies the current directory on the local device. It is limited to 255 bytes and doesn't support space or Chinese characters.
local-file	Filename on the local device. It is limited to 255 bytes and doesn't support space or Chinese character.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example uploads the file named "local-file" in directory "home" of local device to directory "root" on the FTP Server whose user name is user, password is pass and IP address is 192.168.23.69, and changes the filename to "remote-file".

```
Ruijie# copy flash:home/local-file
ftp://user:pass@192.168.23.69/root/remote-file
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9 Tunnel Configuration Commands

9.1 show interfaces tunnel

Use this command to display the tunnel configuration.

show interfaces tunnel [*number*]

Parameter Description

Parameter	Description
number	Specifies the tunnel number.

Defaults N/A

Command Mode Privileged EXEC mode / Global configuration mode / Interface configuration mode

Usage Guide N/A

Configuration Examples The following example displays tunnel 1 information.

```
Ruijie#show interfaces tunnel 1
// Here is the public information about the interface
Tunnel source 1.1.1.2, destination 1.1.1.1, routeable
  Tunnel TOS/Traffic Class not set, Tunnel TTL 254
  Tunnel config nested limit is 0, current nested number is 0
  Tunnel protocol/transport is ipip
  Tunnel transport VPN is no set
Ruijie#show interface tunnel 2
// Here is the public information about the interface
Tunnel attributes:
  Tunnel source 1.1.1.2, destination 1.1.1.1, routeable
  Tunnel TOS/Traffic Class not set, Tunnel TTL 254
  Tunnel config nested limit is 0, current nested number is 0
  Tunnel protocol/transport is gre ip
    Key 0x2, Sequencing disabled
    Checksumming of packets enabled
Tunnel transport VPN is vrf_tunnel
```

Field Description

Field	Description
Destination	The tunnel destination address. The address 0.0.0.0 indicates that the destination address is not configured.
Tunnel source	The tunnel source address, which can be either

	an IPv4 or an IPv6 address. If the **tunnel source interface** command is configured, the tunnel source address is the interface address.
Tunnel TTL	The TTL or hoplimit field of the transmission protocol.
Tunnel TOS	The TOS or traffic class field of the transmission protocol. Note that there is an exception. If the field is 0, and the transmission protocol is the same as the payload protocol, the field of the payload protocol is copied to the transmission protocol.
Tunnel nested-limit	The limit to the number of tunnel nested encapsulation times. This filed is displayed by all tunnels except the 6to4, 6rd and isatap tunnels.
Tunnel protocol/transport	Tunnel encapsulation mode
Key	With the key setting, this field is displayed by only the GRE tunnel.
Checksuming	With the checksum setting, this filed is displayed by only the GRE tunnel.
Tunnel VPN	The destination VRF.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.2 show tunnel statistics

Use this command to display the number of configurable tunnel interfaces and configured tunnel interfaces.

show tunnel statistics

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode / Global configuration mode / Interface configuration mode

Usage Guide This command is used to display the number of configurable tunnel interfaces and configured tunnel interfaces. Note that the actual forwarding capacity is restricted by the number of chip entries. It is possible that the tunnel interface has been created while the chip entry list is full. In that case, the syslog is generated.

Configuration Examples The following example displays the number of configurable tunnel interfaces and configured tunnel interfaces.

```
Ruijie#show tunnel statistics
used: 2,  limit: 1000
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.3 tunnel destination

Use this command to specify the destination IP address of a tunnel interface in interface configuration mode.
Use the **no** form of this command to restore the default setting.
tunnel destination *ip-address*
no tunnel destination

Parameter Description

Parameter	Description
ip-address	Sets the IP address of the specified tunnel destination.

Defaults No destination IP address is set by default.

Command Mode Interface configuration mode

Usage Guide This command must be used to specify the peer address during tunnel setup. Tunnels cannot be set up if this command is not executed.

Configuration Examples The following example sets the destination IP address of tunnel interface 0 to 61.154.101.3.

```
Ruijie(config)# interface tunnel 0
Ruijie(config-if)# tunnel destination 61.154.101.3
```

Related Commands

Command	Description
show interface tunnel	Displays tunnel interface information.

Platform Description N/A

9.4 tunnel mode

Use this command to set the encapsulation mode on a tunnel interface.

Use the **no** or **default** form of this command to restore to the default setting.

tunnel mode { **gre** { **ip** | **ipv6** } | **ipip** | **ipv6ip** }

no tunnel mode

default tunnel mode

Parameter Description

Parameter	Description
gre ip	GRE for the route at the IP layer
gre ipv6	GRE for the route at the IPv6 layer
ipip	IP over IP encapsulation mode
ipv6ip	IPv6 over IP encapsulation mode

Defaults For routers, the default encapsulation mode is GRE IP.

For switches, the default encapsulation mode is IPv6 IP.

Command Mode Interface configuration mode

Usage Guide The tunnel encapsulation format is the tunnel carrier protocol. The default encapsulation format of tunnel interfaces is GRE. You can determine the encapsulation format of tunnel interfaces based on the actual usage. By default, IP tunnel GRE can be implemented without any definition of the encapsulation format.

Configuration Examples The following example encapsulates GRE IP on tunnel interface 0.

```
Ruijie(config)# interface tunnel 0
Ruijie(config-if)# tunnel mode gre ip
```

Related Commands

Command	Description
show interface tunnel	Displays tunnel interface information.

Platform Description N/A

9.5 tunnel source

Use this command to configure the source IP address for the tunnel. Use the **no** form of this command to restore the default setting.

tunnel source { *ipv4-address* | *ipv6-address* | *interface-type interface-number* }

no tunnel source

Parameter Description

Parameter	Description
ipv4-address	Source IPv4 address of the tunnel used as the source IP address of the packets to be transmitted through the tunnel.
ipv6-address	If the tunnel mode ipv6 or tunnel mode gre ipv6 is configured, the source address of the tunnel shall be the IPv6 address. Using the local address of the link as the source address is not supported currently.
interface-type interface-number	Interface referenced by the tunnel, which will be used as the source IPv4 address of the packets to be transmitted through the tunnel.

Defaults No tunnel source address is configured by default.

Command Mode Interface configuration mode.

Usage Guide The source IP address of a tunnel can be a specified IPv4 address or an IPv4 address of an interface. When you configure an auto tunnel (for example, 6to4 and isatap), it is recommended to specify the source address.

A device shall not be configured multiple tunnels with the same encapsulation type, source address and destination address.

If there are multiple auto tunnels, their source addresses shall be different.

Configuration Examples The following example configures an IPv6 manual tunnel.

```
Ruijie(config)# interface tunnel 1
Ruijie(config-if)# tunnel mode ipv6ip
Ruijie(config-if)# tunnel source 1.1.1.1
```

Related Commands

Command	Description
tunnel mode	Configures the mode of a tunnel.
tunnel destination	Configures the destination address of a tunnel.
Tunnel ttl	Configures the TTL of the tunnel.

Platform Description N/A

9.6 tunnel tos

Use this command to set the IPv4 ToS byte or IPv6 traffic class 8 bits fin tunnel intefface configruation mode. Use the **no** form of this command to restore the default setting.

tunnel tos [*num*]

no tunnel tos

Parameter Description

Parameter	Description
num	IPv4 ToS byte or IPv6 traffic class 8 bits, in the range from 0 to 255.

Defaults By default, the inner-layer IPv4 ToS byte is copied to the outer-layer IPv4 header, if both the inner-layer carrier and the outer-layer encapsulation on a tunnel interface use the IPv4 protocol. By default, the inner-layer IPv6 traffic class 8 bits are copied to the outer-layer IPv6 header if both the inner-layer carrier and the outer-layer encapsulation on a tunnel interface use the Ipv6 protocol. In other circumstances, the outer-layer IPv4 ToS and IPv6 traffic class are 0.

Command Mode Interface configuration mode

Usage Guide T This command is used to set GRE tunnel packets to a higher priority.

Configuration Examples The following example sets the ToS byte for a GRE tunnel outer-layer encapsulation protocol to 20 on interface tunnel 1.

```
Ruijie(config)# interface tunnel 1
Ruijie(config-if)# tinnel mode ipv6ip
Ruijie(config-if)# tunnel tos 100
```

Related Commands

Command	Description
show interface tunnel	Displays tunnel interface information.

Platform Description N/A

9.7 tunnel ttl

Use this command to specify the TTL value of the IPv4 header in the encapsulated IPv6 messages. Use the **no** form of this command to restore the default setting.

tunnel ttl *value*

no tunnel ttl

Parameter Description

Parameter	Description
value	TTL value, ranging from 1 to 255.

Defaults The default TTL value is 254.

Command Mode Interface configuration mode.

Usage Guide This command is used to specify the TTL value of the IPv4 header in the encapsulated IPv6 messages.

Configuration Examples

```
Ruijie(config)# interface tunnel 1
Ruijie(config-if)# tunnel mode ipv6ip
Ruijie(config-if)# tunnel ttl 100
```

Related Commands

Command	Description
tunnel mode	Configures the mode of a tunnel.
tunnel source	Configures the source IP address of the tunnel.
tunnel destination	Configures the destination IP address of a tunnel.

Platform Description N/A

10 Network Connectivity Test Tool Commands

10.1 clear rping table all

Use this command to clear Rping entries.

clear rping table [**all |** [**ping-object** *owner test-name*] | [**trace-object** *owner test-name*]]

Parameter Description

Parameter	Description
owner	User index
test-name	Test index

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example clears all Rping entries.

```
Ruijie# clear rping table all
```

The following example clears the specified Rping entry.

```
Ruijie# clear rping table user ruijie
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10.2 ping

Use this command to test the connectivity of a network to locate the network connectivity problem. The command format is as follows:

ping [**oob** | **vrf** *vrf-name* | **ip**] [*address* [**via** *mgmt-name*] [**length** *length*] [**ntimes** *times*] [**timeout** *seconds*] [**data** *data*] [**source** *source*] [**df-bit**] [**validate**] [**detail**] [**interval** millisecond]]

Parameter Description

Parameter	Description

oob	Enables the out-band channel. It must be set when MGMT is specified as the source port.
vrf-name	VRF name
address	Specifies an IPv4 address.
length	Specifies the length of the packet to be sent (range: 36-18024, default: 100).
times	Specifies the number of packets to be sent (range:1-4294967295).
seconds	Specifies the timeout time (range: 1-10 seconds).
data	Specifies the data to fill in.
source	Specifies the source IPv4 address or the source interface. The loopback interface address (for example: 127.0.0.1) is not allowed to be the source address.
df-bit	Sets the DF bit for the IP address. DF bit=1 indicates not to segment the datagrams. By default, the DF bit is 0.
validate	Sets whether to validate the reply packets or not.
detail	Sets whether to contain details in the echoed message. By default, only "!" and "." are displayed.
interface	Outgoing interface.
next-hop	Next hop IPv4 address
millisecond	Ping interval, in the range from 10 to 300000. The default is 100.

Defaults Five packets with 100Byte in length are sent to the specified IP address within specified time (2s by default).

Command Mode Privileged EXEC mode.

Usage Guide If the device can be pinged, the response information is displayed, and the statistics is listed at the end. For the extension functions of ping, the number, quantity and timeout time of the packets to be sent can be specified, and the statistics is also displayed in the end. To use the domain name function, configure the domain name server firstly. For the concrete configuration, refer to the DNS Configuration section.

Configuration Examples

```
The following example  tests the connectivity of a network to locate the network
connectivity problem (regular ping).Ruijie# ping 192.168.21.26
Sending 5, 100-byte ICMP Echoes to 192.168.21.26, timeout is 2 seconds:
  < press Ctrl+C to break >
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/10 ms
```

The following example displays details.

```
Ruijie#ping 192.168.21.26 detail
*Apr 16 09:16:08: %PING-7-DEBUG: Ping vrf index -1.
```

```
Sending 5, 100-byte ICMP Echoes to 192.168.21.26, timeout is 2 seconds:
  < press Ctrl+C to break >
Reply from 192.168.21.26: bytes=100 time=4ms TTL=64
Reply from 192.168.21.26: bytes=100 time=3ms TTL=64
Reply from 192.168.21.26: bytes=100 time=1ms TTL=64
Reply from 192.168.21.26: bytes=100 time=1ms TTL=64
Reply from 192.168.21.26: bytes=100 time=1ms TTL=64
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/4 ms.2
```

The following example tests the connectivity of a network to locate the network connectivity problem (extension ping).

```
Ruijie# ping 192.168.21.26 length 1500 ntimes 100 data ffff source 192.168.21.99
timeout 3
Sending 100, 1500-byte ICMP Echoes to 192.168.21.26, timeout is 3 seconds:
  < press Ctrl+C to break >
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!
Success rate is 100 percent (100/100), round-trip min/avg/max = 2/2/3 ms
```

The following example displays the details.

```
ping 192.168.21.26 length 1500 ntimes 20 data ffff source 192.168.21.99 timeout
3 detail
Sending 20, 1500-byte ICMP Echoes to 192.168.21.26, timeout is 3 seconds:
  < press Ctrl+C to break >
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=2ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=3ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
```

```
Success rate is 100 percent (20/20), round-trip min/avg/max = 1/1/3
ms
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10.3 ping ipv6

Use this command to test the connectivity of a network to locate the network connectivity problem. The command format is as follows:

ping [**vrf** *vrf-name* | [**oob**] **ipv6**] [*ip-address* [**via** *mgmt-name*] [**length** *length*] [**ntimes** *times*] [**timeout** *seconds*] [**data** *data*] [**source** *source*] [**detail**] [**interval** millisecond]]

Parameter Description

Parameter	Description
oob	Enables the out-band channel. It must be set when MGMT is specified as the source port.
vrf-name	VRF name
Ip-address	Specifies an IPv6 address.
length	Specifies the length of the packet to be sent (range: 36-18024, default: 100).
times	Specifies the number of packets to be sent (range:1-4294967295).
seconds	Specifies the timeout time (range: 1-10 seconds).
data	Specifies the data to fill in.
source	Specifies the source IPv6 address or the source interface. The loopback interface address (for example: 127.0.0.1) is not allowed to be the source address.
detail	Sets whether to contain details in the echoed message. By default, only “!” and “.” are displayed.
interface	Outgoing interface.
next-hop	Next hop IPv6 address
millisecond	Ping interval, in the range from 10 to 300000. The default is 100.

Defaults Five packets with 100Byte in length are sent to the specified IP address within specified time 2 seconds by default

Command Mode Privileged EXEC mode.

Usage Guide If the device can be pinged, the response information is displayed, and the statistics is listed at the

end. If the response data does not match the request data, a ‘Request receive error.’ message is displayed and the statistics is listed in the end. For the extension functions of ping ipv6, the number, quantity and timeout time of the packets to be sent can be specified, and the statistics is also displayed in the end. To use the domain name function, configure the domain name server firstly. For the concrete configuration, refer to the DNS Configuration section.

Configuration Examples

The following example tests the connectivity of a network to locate the network connectivity problem.

```
Ruijie# ping ipv6 2000::1
Sending 5, 100-byte ICMP Echoes to 2000::1, timeout is 2 seconds:
  < press Ctrl+C to break >
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/10 ms

The example below shows the extension ping ipv6.
Ruijie# ping  ipv6 2000::1  length 1500 ntimes 100 timeout 3 data ffff source
192.168.4.10:
Sending 100, 1500-byte ICMP Echoes to 2000::1, timeout is 3 seconds
  < press Ctrl+C to break >
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!
Success rate is 100 percent (100/100), round-trip min/avg/max = 2/2/3 ms
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

10.4 show rping detail

Use this command to display Rping information.

show rping detail

Parameter Description

Parameter	Description
N/A	N/A

Defaults

N/A

Command Mode

Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide

This command is used to display the Rping information such as numbers of test accounts and users.

Configuration Examples The following example displays Rping information.

```
Ruijie#show rping detail
Total owner number: 2
Total test number: 4
owner: user1
  test name: taget_1       storage type: volatile
test name: taget_2       storage type: nonVolatile
owner: user2
  test name: taget_1       storage type: permanent
test name: taget_2       storage type: readOnly
```

Field	Description
Total owner number	The number of users
Total test number	The number of Rping accounts
owner	Username
test name	Test name
storage type	Storage type

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10.5 traceroute

Use this command to display all gateways passed by the test packets from the source address to the destination address.

traceroute [**oob** | **vrf** *vrf-name* | **ip**] [*adress* [**via** *mgmt-name*] [**probe** *number*] [**source** *source*] [**timeout** *seconds*] [**ttl** *minimum maximum*]]

Parameter Description

Parameter	Description
oob	Enables the out-band channel. It must be set when MGMT is specified as the source port.
vrf-name	VRF name
address	Specifies an IPv4 address.
number	Specifies the number of probe packets to be sent (range: 1-255).
source	Specifies the source IPv4 address or the source interface. The loopback interface address (for example: 127.0.0.1) is not allowed to be the source address.

seconds	Specifies the timeout time (range: 1-10 seconds).
minimum maximum	Specifies the minimum and maximum TTL values (range:1-255).
interface	Outgoing interface.
next-hop	Next hop IPv4 address

Defaults By default, *seconds* is 3 seconds, *number* is 3, *minimum* and *maximum* are 1 and 255.

Command Mode Privileged EXEC mode: enables extended functions.
User EXEC mode: enables basic functions.

Usage Guide Use the **traceroute** command to test the connectivity of a network to exactly locate the network connectivity problem when the network failure occurs. To use the function domain name, configure the domain name server. For the concrete configuration, refer to the DNS Configuration part.

Configuration Examples The following is two examples of the application bout traceroute, the one is of the smooth network, and the other is the network in which some gateways aren't connected successfully.

1. When the network is connected smoothly:

```
Ruijie# traceroute 61.154.22.36
  < press Ctrl+C to break >
Tracing the route to 61.154.22.36

1     192.168.12.1      0 msec   0 msec   0 msec
2     192.168.9.2       4 msec   4 msec   4 msec
3     192.168.9.1       8 msec   8 msec   4 msec
4      192.168.0.10     4 msec   28 msec  12 msec
5      192.168.9.2      4 msec   4 msec   4 msec
6      202.101.143.154      12 msec  8 msec   24 msec
7      61.154.22.36     12 msec  8 msec   22 msec
```

From above result, it's clear to know that the gateways passed by the packets sent to the host with an IP address of 61.154.22.36 (gateways 1~6) and the spent time are displayed. Such information is helpful for network analysis.

2. When some gateways in the network fail:

```
Ruijie# traceroute 202.108.37.42
  < press Ctrl+C to break >
Tracing the route to 202.108.37.42

1     192.168.12.1      0 msec    0 msec  0 msec
2     192.168.9.2       0 msec    4 msec  4 msec
3     192.168.110.1     16 msec  12 msec  16 msec
4     *  *  *
5     61.154.8.129      12 msec   28 msec  12 msec
6     61.154.8.17       8 msec    12 msec  16 msec
7     61.154.8.250      12 msec   12 msec  12 msec
8     218.85.157.222    12 msec   12 msec  12 msec
```

```
9      218.85.157.130   16 msec   16 msec  16 msec
10     218.85.157.77    16 msec   48 msec  16 msec
11     202.97.40.65     76 msec   24 msec  24 msec
12     202.97.37.65     32 msec   24 msec  24 msec
13     202.97.38.162    52 msec   52 msec  224 msec
14     202.96.12.38     84 msec   52 msec  52 msec
15     202.106.192.226  88 msec   52 msec  52 msec
16     202.106.192.174      52 msec   52 msec  88 msec
17     210.74.176.158   100 msec  52 msec  84 msec
18     202.108.37.42    48 msec   48 msec  52 msec
The above result clearly shown that the gateways passed by the packets sent
to the host with an IP address of 202.108.37.42 (gateways 1~17) and the spent
time are displayed, and gateway 4 fails.
Ruijie# traceroute www.ietf.org

Translating "www.ietf.org"...[OK]
  < press Ctrl+C to break >
Tracing the route to 64.170.98.32

 1     192.168.217.1    0 msec  0 msec  0 msec
 2     10.10.25.1       0 msec  0 msec  0 msec
 3     10.10.24.1       0 msec  0 msec  0 msec
 4     10.10.30.1       10 msec 0 msec  0 msec
 5     218.5.3.254      0 msec  0 msec  0 msec
 6     61.154.8.49      10 msec 0 msec  0 msec
 7     202.109.204.210  0 msec  0 msec  0 msec
 8     202.97.41.69     20 msec 10 msec 20 msec
 9     202.97.34.65     40 msec 40 msec 50 msec
 10    202.97.57.222    50 msec 40 msec 40 msec
 11    219.141.130.122  40 msec 50 msec 40 msec
 12    219.142.11.10    40 msec 50 msec 30 msec
 13    211.157.37.14    50 msec 40 msec 50 msec
 14    222.35.65.1      40 msec 50 msec 40 msec
 15    222.35.65.18     40 msec 40 msec 40 msec
 16    222.35.15.109    50 msec 50 msec 50 msec
 17    *      *      *
 18    64.170.98.32    40 msec 40 msec 40 msec
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10.6 traceroute ipv6

Use this command to display all gateways passed by the test packets from the source address to the destination address.

traceroute [**vrf** *vrf-name* | [**oob**] **ipv6**] [*address* [**via** *mgmt-name*] [**probe** *number*] [**timeout** *seconds*] [**ttl** *minimum maximum*]]

Parameter Description

Parameter	Description
oob	Enables the out-band channel. It must be set when MGMT is specified as the source port.
vrf-name	VRF name
address	Specifies an IPv6 address.
number	Specifies the number of probe packets to be sent.
seconds	Specifies the timeout time.
minimum maximum	Specifies the minimum and maximum TTL values.
interface	Outgoing interface.
next-hop	Next hop IPv6 address

Defaults By default, *seconds* is 3 seconds, *number* is 3, *minimum* and *maximum* are 1 and 255.

Command Mode Privileged EXEC mode: enables extended functions.
User EXEC mode: enables basic functions.

Usage Guide Use the **traceroute ipv6** command to test the connectivity of a network to exactly locate the network connectivity problem when the network failure occurs. To use the function domain name, configure the domain name server. For the concrete configuration, refer to the DNS Configuration part.

Configuration Examples The following is two examples of the application bout traceroute ipv6, the one is of the smooth network, and the other is the network in which some gateways aren't connected successfully.

1. When the network is connected smoothly:

```
Ruijie# traceroute ipv6 3004::1
  < press Ctrl+C to break >
Tracing the route to 3004::1
1     3000::1        0 msec  0 msec  0 msec
2     3001::1        4 msec  4 msec 4 msec
3     3002::1        8 msec  8 msec  4 msec
4     3004::1        4 msec  28 msec  12 msec
```

From above result, it's clear to know that the gateways passed by the packets sent to the host with an IP address of 3004::1 (gateways 1~4) and the spent time are displayed. Such information is helpful for network analysis.

2. When some gateways in the network fail:

```
Ruijie# traceroute ipv6 3004::1
```

```
 < press Ctrl+C to break >
Tracing the route to 3004::1
1     3000::1        0 msec  0 msec  0 msec
2     3001::1        4 msec  4 msec 4 msec
3     3002::1        8 msec  8 msec  4 msec
4     * * *
5     3004::1        4 msec  28 msec  12 msec
```

The above result clearly shown that the gateways passed by the packets sent to the host with an IP address of 3004::1 (gateways 1~5) and the spent time are displayed, and gateway 4 fails.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11 TCP Commands

11.1 ip tcp keepalive

Use this command to enable the TCP keepalive function. Use the **no** form of this command to restore the default setting,

ip tcp keepalive [**interval** *num1*] [**times** *num2*] [**idle-period** *num3*]

no ip tcp keepalive

Parameter Description

Parameter	Description
interval *num1*	The interval of sending the keepalive packet, in the range from1 to 120 in the unit of seconds, The default is 75.
times *num2*	Keepalive packet sending times, in the range from 1 to 10. The default is 6.
idle-period *num3*	Idle time, the time period during which the peer end does not send any packet to the local end, in the range from 60 to 1800 in the unit of seconds. The default is 900.

Defaults The function is disabled by default.

Command Mode Global configuration mode

Usage Guide The keepalive function enables TCP to detect whether the peer end is operating properly. Suppose the keepalive function is enabled together with default **interval**, **times** and **idle-period** settings. TCP begins to send the keepalive packet at an interval of 75 seconds if it does not receive any packet from the peer end in 900 seconds. The TCP connection is considered invalid and then disconnected automatically if the device sends the keepalive packet for six consecutive times without receiving any TCP packet from the peer end. This command applies to both IPv4 and IPv6 TCP.

Configuration Examples The following example enables the TCP keepalive function on the device and sets the **idle-period** and **interval** to180 and 60 respectively. If the device sends the keepalive packet for four consecutive times without receiving any TCP packet from the peer end, the TCP connection is considered invalid.

```
Ruijie(config)# ip tcp keepalive interval 60 times 4 idle-period 180
```

Related Commands

Command	Description
N/A	N/A

Platform Description When you run the RGOS 10.x command **service tcp-keepalives-in** or **service tcp-keepalives-out**, it is converted to this command automatically in RGOS 11.0.

11.2 ip tcp mss

Use this command to set the upper limit of the MSS value. Use the **no** form of this command to restore the default setting.

ip tcp mss *max-segment-size*

no ip tcp mss

Parameter Description

Parameter	Description
max-segment-size	Upper limit of the MSS value in the range from 68 to 10000 bytes

Defaults The default MSS = Outgoing IPv4/v6 MTU- IPv4/v6 header-TCP header.

Command Mode Global configuration mode

Usage Guide This command is used to limit the maximum value of MSS for the TCP connection to be created. The negotiated MSS cannot exceed the configured value. You can use this command to reduce the maximum value of MSS. However, this configuration is not needed in general. This command applies to both IPv4 and IPv6 TCP.

Configuration Examples The following example sets the upper limit of the MSS value to 1300 bytes.

```
Ruijie(config)# ip tcp mss 1300
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.3 ip tcp path-mtu-discovery

Use this command to enable Path Maximum Transmission Unit (PMTU) discovery function for TCP in global configuration mode. Use the **no** form of this command to restore the default setting.

ip tcp path-mtu-discovery [**age-timer** *minutes* **| age-timer infinite**]

no ip tcp path-mtu-discovery

Parameter Description

Parameter	Description
age-timer *minutes*	The time interval for further discovery after discovering PMTU. Its value ranges from 10 to 30 minutes. The default value is 10.
age-timer infinite	No further discovery after discovering PMTU

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide Based on RFC1191, the TCP path MTU function improves the network bandwidth utilization and data transmission when the user uses TCP to transmit the data in batch.
Enabling or disabling this function takes no effect for existent TCP connections and is only effective for TCP connections to be created. This command applies to only IPv4 TCP. This function is enabled for IPv6 TCP constantly and cannot be disabled.
According to RFC1191, after discovering the PMTU, the TCP uses a greater MSS to detect the new PMTU at a certain interval, which is specified by the parameter **age-timer**. If the PMTU discovered is smaller than the MSS negotiated between two ends of the TCP connection, the device will be trying to discover the greater PMTU at the specified interval untill the PMTU value reaches the MSS or the user stops this timer. Use the parameter **age-timer infinite** to stop this timer.

Configuration Examples The following example enables PMTU discovery.

```
Ruijie(config)# ip tcp path-mtu-discovery
```

Related Commands

Command	Description
show tcp pmtu	Shows the PMTU value for the TCP connection.

Platform Description N/A

11.4 ip tcp send-reset

Use this command to enable the device to send the reset packet when receiving the TCP port unreachable packet. Use the **no** form of this command to disable this function,
ip tcp send-reset
no ip tcp send-reset

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode Global configuration mode

Usage Guide In general, when dispatching the TCP packet, the TCP module replies a reset packet automatically to disconnect the TCP connection with the peer end if the TCP connection that this packet belongs to is not found, However, flooding TCP port unreachable packets pose an attack threat to the device, This command can be used to disable the device from sending the reset packet when receiving the TCP port unreachable packet. This command applies to both IPv4 and IPv6 TCP.

Configuration Examples The following example disables the device from sending the reset packet when receiving the TCP port unreachable packet.

```
Ruijie(config)# no ip tcp send-reset
```

Related Commands

Command	Description
N/A	N/A

Platform Description The **ip tcp not-send-rst** command in RGOS 10.x is compatible in RGOS 11.0. When you run this command, it is converted to the **no ip tcp send-reset** command automatically.

11.5 ip tcp synwait-time

Use this command to set the timeout value for SYN packets (the maximum time from SYN transmission to successful three-way handshake). Use the **no** form of this command to restore the default setting.

ip tcp synwait-time *seconds*

no ip tcp synwait-time *seconds*

Parameter Description

Parameter	Description
seconds	Timeout value for SYN packets in the range from 5 to 300 in the unit of seconds.

Defaults The default is 20.

Command Mode Global configuration mode

Usage Guide If there is an SYN attack in the network, reducing the SYN timeout value can prevent resource consumption, but it takes no effect for successive SYN attacks. When the device actively requests a connection with an external device, reducing the SYN timeout value can shorten the time for the user to wait, such as telnet login. For poor network conditions, the timeout value can be increased properly. This command applies to both IPv4 and IPv6 TCP.

Configuration Examples The following example set the timeout value for SYN packets to 10 seconds.

```
Ruijie(config)# ip tcp syntime-out 10
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.6 ip tcp window-size

Use this command to change the size of receiving buffer and sending buffer for TCP connections.
Use the **no** form of this command to restore the default setting.
ip tcp window-size *size*
no ip tcp window-size

Parameter Description

Parameter	Description
size	Size of receiving buffer and sending buffer for TCP connections in the range from 128 to 65535 << 14 bytes.

Defaults The default is 65535.

Command Mode Global configuration mode

Usage Guide The TCP receiving buffer is used to buffer the data received from the peer end. These data will be subsequently read by application programs. Generally, the window size of TCP packets implies the size of free space in the receiving buffer. For connections involving a large bandwidth and mass data, increasing the size of receiving buffer will remarkably improve TCP transmission performance.
The sending buffer is used to buffer the data of application programs. Each byte in the sending buffer has a sequence number, and bytes with sequence numbers acknowledged will be removed from the sending buffer. Increasing the sending buffer will improve the interaction between TCP and application programs, thus enhancing the performance. However, increasing the receiving buffer and sending buffer will result in more memory consumption of TCP.
This command is used to change the size of receiving buffer and sending buffer for TCP connections. This command changes both the receiving buffer and sending buffer, and only applies to subsequent connections. This command applies to both IPv4 and IPv6 TCP.

Configuration Examples The following example sets the TCP window size to 16386 bytes.

```
Ruijie(config)# ip tcp window-size 16386
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.7 service tcp-keepalives-in

Use this command to enable the keepalive function for the TCP server. Use the no form of this command to restore the default setting.

service tcp-keepalives-in [*interval*] [**garbage**]

no service tcp-keepalives-in

Parameter Description

Parameter	Description
interval	The interval of sending keepalive packets, in the range from 1 to 65535 in the unit of seconds. The default is 60.
garbage	The keepalive packet contains one-byte invalid data. The invalid data is not contained by default.

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide The keepalive function enables the TCP server to detect whether the client is operating properly. If the TCP server sends the keepalive packet for four consecutive times without receiving any TCP packet from the client, the TCP connection is considered invalid and then is disconnected automatically.

Configuration Examples The following example enables the keepalive function for the TCP server and sets the interval of sending the keepalive packet to 10 seconds. The keepalive packet contains one-byte invalid data.

```
Ruijie(config)# service tcp-keepalives-in 10 garbage
```

Related Commands

Command	Description
N/A	N/A

Platform Description When you run this RGOS 10.x command, it is converted to the **ip tcp keepalive** command automatically in RGOS 11.0.

11.8 service tcp-keepalives-out

Use this command to enable the keepalive function for the TCP client. Use the **no** form of this command to restore the default setting,

service tcp-keepalives-out [*interval*] [**garbage**]

no service tcp-keepalives-out [*interval*] [**garbage**]

Parameter Description

Parameter	Description
interval	The interval of sending keepalive packets, in the range from 1 to 65535 in the unit of seconds. The default is 60.
garbage	The keepalive packet contains one-byte invalid data. The invalid data is not contained by default.

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide The keepalive function enables the TCP client to detect whether the server is operating properly. If the TCP client sends the keepalive packet for four consecutive times without receiving any TCP packet from the server, the TCP connection is considered invalid and then is disconnected automatically.

Configuration Examples The following example enables the keepalive function for the TCP client and sets the interval of sending the keepalive packet to 10 seconds. The keepalive packet contains one-byte invalid data

```
Ruijie(config)# service tcp-keepalives-out 10 garbage
```

Related Commands

Command	Description
N/A	N/A

Platform Description When you run this RGOS 10.x command, it is converted to the **ip tcp keepalive** command automatically in RGOS 11.0.

11.9 show ipv6 tcp connect

Use this command to display the current IPv6 TCP connection information.
show ipv6 tcp connect [**local-ipv6** *X:X:X:X::X*] [**local-port** *num*] [**peer-ipv6** *X:X:X:X::X*] [**peer-port** *num*]
Use this command to display the current IPv6 TCP connection statistics.
show ipv6 tcp connect statistics

Parameter Description

Parameter	Description
local-ipv6 *X:X:X:X::X*	Local IPv6 address
local-port *num*	Local port

peer-ipv6 *X:X:X:X::X*	Peer IPv6 address
peer-port *num*	Peer port
statistics	Displays IPv6 TCP connection statistics

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the current IPv6 TCP connection information.

```
Ruijie#show ipv6 tcp connect
Number Local Address    Foreign Address         State       Process name
1     :::22           :::0                  LISTEN      rg-sshd
2     :::23           :::0                  LISTEN      rg-telnetd
3     1000::1:23       1000::2:64201          ESTABLISHED  rg-telnetd
```

The following example displays the current IPv6 TCP connection statistics.

```
Ruijie#show ipv6 tcp connect statistics
State         Count
-----      -----
ESTABLISHED 1
SYN_SENT     0
SYN_RECV     0
FIN_WAIT1    0
FIN_WAIT2    0
TIME_WAIT    0
CLOSED        0
CLOSE_WAIT   0
LAST_ACK     0
LISTEN        1
CLOSING       0
Total: 2
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.10 show ipv6 tcp pmtu

Use this command to display information about IPv6 TCP PMTU.

show ipv6 tcp pmtu [**local-ipv6** *X:X:X:X::X*] [**local-port** *num*] [**peer-ipv6** *X:X:X:X::X*] [**peer-port** *num*]

Parameter Description

Parameter	Description
local-ipv6 *X:X:X:X::X*	Local IPv6 address
local-port *num*	Local port
peer-ipv6 *X:X:X:X::X*	Peer IPv6 address
peer-port *num*	Peer port

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example information about IPv6 TCP PMTU.

```
Ruijie# show ipv6 tcp pmtu
Number  Local Address          Foreign Address       PMTU
1       1000::1:23               1000::2.13560
```

Field	Description
Number	Number
Local Address	Local address and port number. The number after the last colon is the port number.
Foreign Address	Remote address and port number. The number after the last colon is the port number.
PMTU	Path MTU.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.11 show ipv6 tcp port

Use this command to display the current IPv6 TCP port status.

show ipv6 tcp port [*num*]

Parameter

Parameter	Description

Description

num	Port number

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the current IPv6 TCP port status.

```
Ruijie#show ipv6 tcp port
TCP connections on port 23:
Number  Local Address Foreign Address   State
1      1000::1:23   1000::2:64571     ESTABLISHED
Total: 1

TCP connections on port 2650:
Number  Local Address Foreign Address   State
Total: 0
```

Field	Description
Number	Number
Local Address	Local address and port number.
Foreign Address	Remote address and port number.

State	Current status of the TCP connection. There are eleven possible states: CLOSED: The connection has been closed. LISTEN: Listening state SYNSENT: In the three-way handshake phase when the SYN packet has been sent out. SYNRCVD: In the three-way handshake phase when the SYN packet has been received. ESTABLISHED: The connection has been established. FINWAIT1: The local end has sent the FIN packet. FINWAIT2: The FIN packet sent by the local end has been acknowledged. CLOSEWAIT: The local end has received the FIN packet from the peer end. LASTACK: The local end has received the FIN packet from the peer end, and then sent its own FIN packet. CLOSING: The local end has sent the FIN packet from the peer end, and received the FIN packet from the peer end before the ACK packet for the peer end to respond with this FIN packet is received. TIMEWAIT: The FIN packet sent by the local end has been acknowledged, and the local end has also acknowledged the FIN packet.
Process Name	Process name

The following example displays the current IPv6 TCP connection statistics.

```
Ruijie#show ipv6 tcp connect statistics
State         Count
-----      -----
ESTABLISHED 1
SYN_SENT     0
SYN_RECV     0
FIN_WAIT1    0
FIN_WAIT2    0
TIME_WAIT    0
CLOSED        0
CLOSE_WAIT   0
LAST_ACK     0
LISTEN        1
CLOSING       0
Total: 2
```

Related Commands

Command	Description
N/A	N/A

Platform N/A

Description

11.12 show tcp connect

Use this command to display basic information about the current TCP connections.

show tcp connect [**local-ip** *a.b.c.d*] [**local-port** *num*] [**peer-ip** *a.b.c.d*] [**peer-port** *num*]

Use this command to display the current IPv4 TCP connection statistics.

show tcp connect statistics

Parameter Description

Parameter	Description
local-ip *a.b.c.d*	Local IP address.
local-port *num*	Local port.
peer-ip *a.b.c.d*	Peer IP address.
peer-port *num*	Peer port.
statistics	Displays IPv4 TCP connection statistics.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the current IPv4 TCP connection information.

```
Ruijie#show tcp connect
Number Local Address    Foreign Address         State      Process name
1      0.0.0.0:22       0.0.0.0:0              LISTEN     rg-sshd
2      0.0.0.0:23       0.0.0.0:0              LISTEN     rg-telnetd
3      1.1.1.1:23       1.1.1.2:64201          ESTABLISHED rg-telnetd
```

Field	Description
Number	Sequence number.
Local Address	The Local address and port number. The number after the last “.” is the port number. For example, in “2002::2.23” and “192.168.195.212.23” , “23” is the port number.
Foreign Address	The remote address and port number. The number after the last “.” is the port number. For example, in “2002::2.23” and “192.168.195.212.23” , “23” is the port number.
State	Current status of the TCP connection. There are eleven possible states: CLOSED: The connection has been closed. LISTEN: Listening state SYNSENT: In the three-way handshake phase when the SYN

	packet has been sent out. SYNRCVD: In the three-way handshake phase when the SYN packet has been received. ESTABLISHED: The connection has been established. FINWAIT1: The local end has sent the FIN packet. FINWAIT2: The FIN packet sent by the local end has been acknowledged. CLOSEWAIT: The local end has received the FIN packet from the peer end. LASTACK: The local end has received the FIN packet from the peer end, and then sent its own FIN packet. CLOSING: The local end has sent the FIN packet from the peer end, and received the FIN packet from the peer end before the ACK packet for the peer end to respond with this FIN packet is received. TIMEWAIT: The FIN packet sent by the local end has been acknowledged, and the local end has also acknowledged the FIN packet.
Process name	Process name.

The following example displays the current IPv4 TCP connection statistics.

```
Ruijie#show tcp connect statistics
State         Count
-----      -----
ESTABLISHED 1
SYN_SENT     0
SYN_RECV     0
FIN_WAIT1    0
FIN_WAIT2    0
TIME_WAIT    0
CLOSED        0
CLOSE_WAIT   0
LAST_ACK     0
LISTEN        1
CLOSING       0
Total: 2
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.13 show tcp parameter

Use this command to show TCP parameters.

show tcp parameter

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example shows TCP parameters.

```
Ruijie#show tcp parameter
Hash table information:
  Established hash bucket size: 16384
  Bind hash bucket size: 16384
Memory information:
  Global memory limit: low=92160, pressure=122880, high=184320 (unit: pages)
  Per-socket receive buffer size: min=4096, default=87380, max=3932160 (unit:
bytes)
  Per-socket send buffer size: min=4096, default=16384, max=3932160 (unit:
bytes)
  Current allocated memory: 0
  Current memory pressure flag: 0
SYN specific information:
  Max SYN_RECV sockets per LISTEN socket: 65535
  Max SYN retries: 5
  Max SYN ACK retries: 5
Timewait specific information:
  Max timewait sockets: 180000
  Current timewait sockets: 0
  Timewait recycle: 0
  Reuse timewait port: 0
Keepalive information:
  Keepalive on: 0
  Idle period: 900 seconds
  Interval: 75 seconds
  Max probes: 6
MTU probing:
```

```
  Enable mtu probing: 0
FIN specific information:
  FIN_WAIT_2 timeout: 60 seconds
Orphan socket information:
  Max orphans: 16384
  Max orphan retries: 0
Current orphans: 0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.14 show tcp pmtu

Use this command to display information about TCP PMTU.

show tcp pmtu [**local-ip** *a.b.c.d*] [**local-port** *num*] [**peer-ip** *a.b.c.d*] [**peer-port** *num*]

Parameter Description

Parameter	Description
local-ip *a.b.c.d*	Local IP address.
local-port *num*	Local port.
peer-ip *a.b.c.d*	Peer IP address.
peer-port *num*	Peer port.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays PMTU of IPv4 TCP connection.

```
Ruijie# show tcp pmtu
Number  Local Address          Foreign Address       PMTU
1      192.168.195.212.23     192.168.195.112.13560  1440
```

Field	Description
Number	Sequence number.
Local Address	The local address and the port number. The number after the last “.” is the port number. For example, in “2002::2.23” and

	“192.168.195.212.23” , “23” is the port number.
Foreign Address	The remote address and the port number. The number after the last "." is the port number. For example, in “2002::2.23” and “192.168.195.212.23” , “23” is the port number.
PMTU	PMTU value.

Related Commands

Command	Description
ip tcp path-mtu-discovery	Enables the TCP PMTU discovery function.

Platform Description N/A

11.15 show tcp port

Use this command to display information about the current TCP port.

show tcp port [*num*]

Parameter Description

Parameter	Description
num	Port number

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the current IPv4 TCP port status.

```
Ruijie#sh tcp port
tcp port status:
Tcpv4 listen on 2650 have connections:
TCB       Foreign Address                      Port    State
Tcpv4 listen on 2650 have total 0 connections.
Tcpv4 listen on 23 have connections:
TCB       Foreign Address                      Port    State
c340800    1.1.1.2                            64571   ESTABLISHED
Tcpv4 listen on 23 have total 1 connections.
Tcpv6 listen on 23 have connections:
TCB       Foreign Address                      Port    State
c429980    3000::2                            64572   ESTABLISHED
```

Tcpv6 listen on 23 have total 1 connections.

Field	Description
TCB	The control block's location in the current memory
Foreign Address	Remote address
Port	Remote port number
State	Status of the current TCP connection. There are eleven possible states: CLOSED: The connection has been closed. LISTEN: Listening state SYNSENT: In the three-way handshake phase when the SYN packet has been sent. SYNRCVD: In the three-way handshake phase when the SYN packet has been received. ESTABLISHED: The connection has been established. FINWAIT1: The local end has sent the FIN packet. FINWAIT2: The FIN packet sent by the local end has been acknowledged. CLOSEWAIT: The local end has received the FIN packet from the peer end. LASTACK: The local end has received the FIN packet from the peer end, and then sent its own FIN packet. CLOSING: The local end has sent the FIN packet from the peer end, and received the FIN packet from the peer end before the ACK packet for the peer end to respond with this FIN packet is received. TIMEWAIT: The FIN packet sent by the local end has been acknowledged, and the local end has also acknowledged the FIN packet.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.16 show tcp statistics

Use this command to show TCP statistics on received packets, three way handshake and time-wait.

show tcp parameter

Parameter Description

Parameter	Description

N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example shows TCP parameters.

```
Ruijie#show tcp statistics
TCP Packets
  Received: 1103
  Errors  : 0(checksum: 0)
Three way handshake
  Request queue overflow: 0
  Accept backlog full: 0
  Web authentication limit per user: 0
  Failed to alloc memory for request sock: 0
  Failed to create open request child: 0
  SYN ACK retransmits: 0
  Timeouted requests: 0
Time-wait
  Time-wait bucket table overflow: 0
```

Field Description

Field	Description
TCP Packets	Normal packets and error packets
Three way handshake	Three way handshake information, including session request count, server-client connection count, three way handshake failure count caused by Web authentication limit, TCP socket failure count caused by memory shortage, sub-session failure count, packet retransmission count and session failure count caused by retransmission timeout.
Time-wait	Session in TIMEWAIT state

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

12 IPv4/IPv6 REF Commands

12.1 clear ip ref packet statistics

Use this command to clear IPv4 Ruijie Express Forwarding (REF) packet statistics.

clear ip ref packet statistics

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example clears IPv4 REF packet statistics.

```
Ruijie #clear ip ref packet statistics
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A.

12.2 clear ipv6 ref packet statistics

Use this command to clear IPv6 REF packet statistics.

clear ipv6 ref packet statistics

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example clears IPv6 REF packet statistics.

```
Ruijie #clear ipv6 ref packet statistics
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A.

12.3 show ip ref adjacency

Use this command to display the information about the specified adjacent node or all adjacent nodes.

show ip ref adjacency [**glean** | **local** | *ip-address* | **interface** *interface_type interface_number* | **discard** | **statistics**]

Parameter Description

Parameter	Description
glean	Aggregate adjacent node, which is used for a direct route
local	Local adjacent node, which is used by the local host
ip	Next-hop IP address
interface_type	Interface type
interface_number	Interface number
discard	Displays discarded adjacent nodes.
statistics	Statistics

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command can be used to display the information about the adjacent node table in the current REF module. By specifying parameters, the information about the aggregate adjacent node, local adjacent node, adjacent node of the specified IP address, adjacent node associated with the specified interface, and all adjacent nodes can be displayed.

Configuration Examples The following example displays the information about all adjacent nodes in the adjacent node table.

```
Ruijie#show ip ref adjacency
id state     type    rfct chg  ip          interface        linklayer(header
data)
1  unresolved mcast   1    0   224.0.0.0
9  resolved   forward 1    0   192.168.50.78   GigabitEthernet 0/0  00 25 64 C5
9D 6A 00 D0 F8 98 76 54 08 00
7  resolved   forward 1    0   192.168.50.200  GigabitEthernet 0/0  00 04 5F 87
69 66 00 D0 F8 98 76 54 08 00
```

```
6  unresolved  glean  1    0   0.0.0.0        GigabitEthernet 0/0
4  unresolved  local  3    0   0.0.0.0        Local 1
```

Description of fields:

Field	Description
id	Adjacent node ID
state	Adjacent node state: Unresolved Resolved
type	Adjacent node type Local: local adjacency Forward: forward adjacency Discard: discard adjacency Glean: glean adjacency Mcast: multicast adjacency
rfct	Reference count of the adjacent node
chg	Whether the adjacent node is on the changing link.
ip	IP address of the adjacent node
interface	Interface
linklayer	Layer 2 head

Related Commands

Command	Description
show ip ref route	Displays all route information in the current REF module.

Platform Description N/A.

12.4 show ip ref exact-route

This command is used to display the IPv4 REF exact route.

show ip ref exact-route [**oob** | **vrf** *vrf_name*] *source_ipaddress dest_ipaddress*

Parameter Description

Parameter	Description
oob	Out of band, namely, the network that the management interface belongs to, supported only by the device supporting the management interface.
vrf *vrf_name*	VRF name, supported only by the VRF-supported device.
source_ipaddress	Source IP address of the packet
dest_ipaddress	Destination IP address of the packet

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to specify the source and the destination IP address of the IP packets, and to display the path of forwarding the current packet with REF

Configuration Examples The following example displays the IPv4 REF exact route from 192.168.217.74 to 192.168.13.1.

```
Ruijie# show ip ref exact-route 192.168.217.74 192.168.13.1
192.168.217.74  --> 192.168.13.1 (vrf global):
id state    type    rfct chg  ip          interface        linklayer(header
data)
9  resolved forward 1    0   192.168.17.1  GigabitEthernet 0/0 00 25 64 C5 9D
6A 00 D0 F8 98 76 54 08 00
```

Description of fields:

Field	Description
id	Adjacency ID
state	Adjacency state: Unresolved Resolved
type	Adjacency type Local: local adjacency Forward: forward adjacency Discard: discard adjacency Glean: glean adjacency Mcast: multicast adjacency
rfct	Reference count of the adjacency
chg	Whether the adjacency is on the changing link.
ip	Adjacency IP address
interface	Interface
linklayer	Layer 2 head

Related Commands

Command	Description
show ip ref route	Displays all routing information in the current REF module.

Platform Description N/A.

12.5 show ip ref packet statistics

Use this command to display IPv4 REF packet statistics.

show ip ref packet statistics

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays IPv4 REF packet statistics.

```
Ruijie #show ip ref pkt-statistic
ref packet statistic:
   bad head       : 0
   lookup fib fail : 0
   local adj      : 0
   glean adj      : 0
   forward        : 0
   redirect       : 0
   punt adj       : 0
   outif not in ef : 0
   ttl expiration  : 0
   no ip routing   : 0
```

Field	Description
total recved	Number of total packets received by REF
bad head	Number of the packets with false header
lookup fib fail	Number of the packets with failed REF routing
drop adj	Number of the packets matching the dropped adjacency
local adj	Number of the packets matching the local adjacency
glean adj	Number of the packets matching the gleaned adjacency
forward	Number of the packets matching the forwarded adjacency

no ip routing	Number of the packets not allowed to be forwarded and sent to local.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A.

12.6 show ip ref resolve-list

Use this command to display the IPv4 REF resolution information.

show ip ref resolve-list

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays IPv4 REF resolution information.

```
Ruijie#show ip ref resolve-list
IP               res_state flags interface
1.1.1.1           unres    1     GigabitEthernet 0/0
```

Field	Description
IP	IP address
res_state	unres: unresolved res: resolved
flags	0: related to adjacency 1: unrelated to adjacency
interface	Interface

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

12.7 show ip ref route

Use this command to display all the routing information in the IPv4 REF table.

show ip ref route [**oob** | **vrf** *vrf_name*] [**default** | *ip mask* | **statistics**]

Parameter Description

Parameter	Description
oob	Out of band, namely, the network that the management interface belongs to, supported only by the device supporting the management interface.
vrf *vrf_name*	VRF name, supported only by the VRF-supported device.
default	Specifies the default route.
ip	Specifies the destination IP address of the route
mask	Specifies the mask of the route.
statistics	Statistics

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to display the related routing information on the current REF table, and specify the default route and all the routing information matching IP/MASK.

Configuration Examples The following example displays all the routing information in the IPv4 REF table.

```
Ruijie#show ip ref route
Codes: * - default route
     # - zero route
ip     mask    weight  path-id     next-hop       interface
255.255.255.255 255.255.255.255 1  4   0.0.0.0    Local 0
224.0.0.0       240.0.0.0        1  1   224.0.0.0
224.0.0.0     255.255.255.0    1  4     0.0.0.0    Local 0
192.168.50.0  255.255.255.0     1  6   0.0.0.0 FastEthernet 0/0
192.168.50.255  255.255.255.255 1  2      0.0.0.0
192.168.50.200 255.255.255.255 1 7 192.168.50.200 FastEthernet 0/0
192.168.50.122  255.255.255.255 1 4 0.0.0.0        Local 0
192.168.50.78  255.255.255.255 1 9 192.168.50.78  FastEthernet 0/0
```

Field	Description
ip	Destination IP address
mask	Mask
path-id	Adjacent identity
next-hop	Address of next hop

weight	Routing weight
interface	Egress

Related Commands

Command	Description
show ip ref exact-route	Displays the accurate REF forwarding path of an IP packet.

Platform Description N/A

12.8 show ipv6 ref adjacency

Use this command to display the information about the IPv6 adjacent node.

show ipv6 ref adjacency [**glean** | **local** | *ipv6-address* | **interface** *interface_type interface_number* | **discard** | **statistics**]

Parameter Description

Parameter	Description
glean	Aggregate adjacent node, which is used for a direct route
local	Local adjacent node, which is used by the local host
ipv6-address	Next-hop IP address
interface_type	Interface type
interface_number	Interface number
discard	Displays discarded adjacent nodes.
statistics	Statistics

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command can be used to display the information about the adjacent node table in the privileged EXEC mode and global configuration mode.

Configuration Examples The following example displays the information about the IPv6 adjacent node..

```
Ruijie#show ipv6 ref adjacency
id    state      type    rfct chg ip    interface           linklayer(header
data)
1     unresolved  glean   1    0   ::    GigabitEthernet 0/0
2     unresolved  local   2    0   ::1   Local 1
```

Description of fields:

Field	Description

id	Adjacent node ID
state	Adjacent node state: Unresolved Resolved
type	Adjacent node type Local: local adjacency Forward: forward adjacency Discard: discard adjacency Glean: glean adjacency Mcast: multicast adjacency
rfct	Reference count of the adjacent node
chg	Whether the adjacent node is on the changing link.
ip	IP address of the adjacent node
interface	Interface
linklayer	Layer 2 head

For distributed routers, id is divided into two fields, namely, gid and lid, standing for global adjacent node ID and local adjacent node ID respectively.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A.

12.9 show ipv6 ref exact-route

This command is used to display the IPv6 REF exact route.

show ipv6 ref exact-route [**oob** | **vrf** *vrf_name*] *source-ipv6-address destination-ipv6-address*

Parameter Description

Parameter	Description
oob	Out of band, namely, the network that the management interface belongs to, supported only by the device supporting the management interface.
vrf *vrf_name*	VRF name, supported only by the VRF-supported device.
source-ipv6-address	Source IP address of the packet
destination-ipv6-address	Destination IP address of the packet

Defaults N/A

Command Privileged EXEC mode

Mode

Usage Guide N/A

Configuration Examples The following example displays the IPv4 REF exact route from 2001:db8:1::1 to 3001:db8:2::2.

```
Ruijie#show ipv6 exact-route 2001:db8:1::1 3001:db8:2::2
2001:db8:1::1 --> 3001:db8:2::2 (vrf global):
ID  state      type    rfct chg ip interface           linklayer(header data)
3   unresolve   glean   1    0   :: GigabitEthernet 0/0
```

Description of fields:

Field	Description
id	Adjacent node ID
state	Adjacent node state: Unresolved Resolved
type	Adjacent node type Local: local adjacency Forward: forward adjacency Discard: discard adjacency Glean: glean adjacency Mcast: multicast adjacency
rfct	Reference count of the adjacent node
chg	Whether the adjacent node is on the changing link.
ip	IP address of the adjacent node
interface	Interface
linklayer	Layer 2 head

Related Commands

Command	Description
N/A	N/A

Platform Description N/A.

12.10 show ipv6 ref packet statistics

Use this command to display IPv6 REF packet statistics.

show ipv6 ref packet statistics

Parameter

Parameter	Description

Description

N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays IPv6 REF packet statistics.

```
Ruijie#show ipv6 ref packet statistics
ref packet statistic:
   bad head       : 0
   lookup fib fail : 0
   local adj      : 0
   glean adj      : 0
   forward        : 0
   redirect       : 0
   hop-limit expiration  : 0
   no ipv6 unicast-routing   : 0
```

Field	Description
total recved	Number of total packets received by REF
bad head	Number of the packets with false header
lookup fib fail	Number of the packets with failed REF routing
drop adj	Number of the packets matching the dropped adjacency
local adj	Number of the packets matching the local adjacency
glean adj	Number of the packets matching the gleaned adjacency
forward	Number of the packets matching the forwarded adjacency
no ip routing	Number of the packets not allowed to be forwarded and sent to local.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A.

12.11 show ipv6 ref resolve-list

This command is used to display the IPv6 REF resolution information.

show ipv6 ref resolve-list

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays IPv6 REF resolution information.

```
Ruijie#show ipv6 ref resolve-list
IP              res_state flags interface
1000::1          unres    1     GigabitEthernet 0/0
```

Field	Description
IP	IPv6 address
res_state	unres: unresolved res: resolved
flags	0: related to adjacency 1: unrelated to adjacency
interface	Interface

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

12.12 show ipv6 ref route

Use this command to display all the routing information in the IPv6 REF table.

show ipv6 ref route [**oob** | **vrf** *vrf-name*] [**default** | **statistics** | **prefix/len**]

Parameter Description

Parameter	Description
oob	Out of band, namely, the network that the management interface belongs to, supported only by the device supporting the management interface.
vrf *vrf_name*	VRF name, supported only by the VRF-supported device.
default	Specifies the default route.
statistics	Statistics
prefix/len	Displays the route with the specified prefix (X:X:X:X::X/<0-128>).

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to display all routing information in the IPv6 REF table. If there is no VRF parameter, information about the global REF table is displayed; if there is VRF parameter, information about the specified VRF table is displayed. The command can also be used to display information about the default route, the route with the specified prefix, and statistics of all types of routes.

Configuration Examples The following example displays all the routing information in the REF IPv6 table.

```
Ruijie#show ipv6 ref route
Codes: * - default route
 prefix/len                   weight path_id  next_hop interface
 2001:da8:ffe:2::/64            1       3      ::     GigabitEthernet 0/0
 2001:da8:ffe:2::3/128          1       2      ::1    Local 1
 fe80::/10                    1       6       ::    Null 0
 fe80::21a:a9ff:fe3b:fa41/128   1       2       ::1   Local 1
```

Field	Description
prefix/len	IPv6 prefix and prefix length.
path-id	Adjacent identity
next-hop	Address of next hop
weight	Routing weight
interface	Interface

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

13 ECMP CLUSTER Commands

13.1 ecmp cluster enable

Use this command to enable ECMP cluster. Use the no form of this command to disable this function.

ecmp cluster enable

no ecmp cluster enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults

ECMP cluster is disabled by default.

Command Mode

Global configuration mode

Usage Guide

ECMP is available in VSU scenarios only when the devices are deployed in a dual-NIC server or the ECMP egress is an aggregation port and the aggregation port link is UP on both of the active and standby VSU devices.

ECMP-CLUSTER supports only one DOWN port. And the traffic balancing state of the UP port does not change.

Configuration Examples

The following example enables ECMP cluster.

```
Ruijie#configure
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#ecmp cluster enable
```

The following example disables ECMP cluster

```
Ruijie#configure
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#no ecmp cluster enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

IP Routing Configuration Commands

1. RIP Commands
2. OSPFv2 Commands
3. OSPFv3 Commands
4. IS-IS Commands
5. BGP4 Commands
6. RIPng Commands
7. NSM Commands
8. Protocol-independent Commands
9. PBR Commands
10. VRF Commands
11. L3MAC Commands
12. Hardware Capacity Query Commands

1 RIP Commands

1.1 address-family

Use this command to configure the RIP protocol in address family configuration sub-mode. Use the **no** form of this command to restore the default setting.
address-family ipv4 vrf *vrf-name*
no address-family ipv4 vrf *vrf-name*

Parameter Description

Parameter	Description
vrf *vrf-name*	Specifies the VRF name associated with the sub-mode command.

Defaults The address family of the RIP protocol is not configured by default.

Command Mode Route configuration mode

Usage Guide Use the **address-family** command to enter the address family configuration sub-mode. The prompt is (config-router-af) #. When you specify the VRF associated with the sub-mode for the first time, the RIP instance corresponding to the VRF will be created. In the sub-mode, you can configure the VRF RIP routing information.
To remove the address family sub-mode and return to the route configuration mode, use the **exit-address-family** or **exit** command.

Configuration Examples The following example creates a VRF with the name of vpn1 and creates its RIP instance.

```
Ruijie(config)# ip vrf vpn1
Ruijie(config-vrf)# exit
Ruijie(config)# interface fastEthernet 1/0
Ruijie(config-if-FastEthernet 0/1)# ip vrf forwarding vpn1
Ruijie(config-if-FastEthernet 0/1)# ip address 192.168.1.1 255.255.255.0
Ruijie(config)# router rip
Ruijie(config-router)# address-family ipv4 vrf vpn1
Ruijie(config-router)# network 192.168.1.0
Ruijie(config-router)# exit-address-family
```

Related Commands

Command	Description
exit-address-family	Exits the address family configuration sub-mode.
ip vrf	Creates a VRF.

Platform Description N/A

1.2 auto-summary

Use this command to enable automatic summary of RIP routes. Use the **no** form of this command to disable this function

auto-summary

no auto-summary

Parameter Description

Parameter	Description
N/A	N/A

Defaults Automatic summary of RIP routes is enabled by default

Command Mode Routing progress configuration mode

Usage Guide Automatic RIP route summary means the subnet routes will be automatically summarized into the routes of the classified network when they traverse through the subnet. Automatic route summary is enabled by default for RIPv1 and RIPv2.

Automatic RIP route summary improves the flexibility and effectiveness of the network. If the summarized route exists, the sub-routes contained in the summarized route cannot be seen in the routing table, reducing the size of the routing table significantly.

Advertising the summarized route is more efficient than advertising individual routes in light of the following factors:

- The summarized route is always processed preferentially when you query the RIP database.
- Any sub-route is ignored when you query the RIP database, reducing the processing time.
- If you want to learn the specific sub-routes instead of the summarized route, disable the automatic route summary function. Only when RIPv2 is configured, the automatic route summary function can be disabled. For the RIPv1, the automatic route summary function is always enabled.

The range of the supernet route is wider than that of the classful network. Therefore, this command takes no effect on the supernet route.

Configuration Examples The following example disables automatic route summary of RIPv2.

```
Ruijie (config)# router rip
Ruijie (config-router)# version 2
Ruijie (config-router)# no auto-summary
```

Related Commands

Command	Description
version	Defines the RIP software versions: v1 or v2. Both v1 and v2 are supported by default.

Platform Description N/A

1.3 bdf all-interfaces

Use this command to enable all interfaces running RIP to use the BDF function. Use the **no** form of this command to restore the default setting.

bdf all-interfaces

no bdf all-interfaces

Parameter Description

Parameter	Description
N/A	N/A

Defaults BFD is not configured by default.

Command Mode Routing process configuration mode

Usage Guide With the BFD function enabled on the RIP, one BFD session will be established for the RIP routing information source (the source address of the RIP route update packet). Once the BFD neighbor fails, the RIP routing information will be invalid directly and no longer join routing or forwarding.

You can also use the interface configuration mode command **ip rip bfd [disable]** to enable or disable the BFD function on the specified interface, which takes precedence over the command **bfd all-interfaces** in the routing progress configuration mode.

Configuration Examples N/A

Related Commands

Command	Description
route ip	Creates the RIP routing progress and enters the routing process configuration mode.
ip rip bfd [**disable**]	Configures a specified interface running RIP to enable or disable link detection using the BFD.

Platform Description N/A

1.4 default-information originate

Use this command to generate a default route in the RIP progress. Use the **no** form of this command to delete the generated default route.

default-information originate [**always] [metric** *metric-value*] [**route-map** *map-name*]

no default-information originate [**always**] [**metric**] [**route-map** *map-name*]

Parameter Description

Parameter	Description
always	(Optional) Enables RIP to generate the default route, no matter whether the default route exists or not.
metric *metric-value*	(Optional) The original metric value of the default route with the value range 115 of metric-value.
route-map *map-name*	(Optional) Name of the associated route-map. Route-map is not associated by default.

Defaults

No default route is generated by default.

The default metric value is 1.

Command Mode

Routing process configuration mode

Usage Guide

By default, RIP will not advertise the default route if the default route exists in the routing table of the router. In this case, use the **default-information originate** command to notify the neighbor of the default route.

With the parameter always configured, no matter whether the default route exists in the RIP routing process or not, the default route will be advertised to the neighbor but is not shown in the local routing table. You can use the **show ip rip database** command to view the RIP routing information database to confirm whether the default route is generated.

Use the parameter **route-map** to control more about the default route advertised to RIP. For example, use the **set metric** command to set the metric value of the default route.

The route-map set metric rule takes precedence over the parameter metric value configuration of the default route. If the parameter metric is not configured, the default metric value is used by the default route.

If the default route can be generated in the RIP process by using this command, RIP will not learn the default route advertised from the neighbor.

For the default route generated by using the ip default-network command, the default-information originate command is required to add the default route to RIP.

Configuration Examples

The following example generates a default route to the RIP routing table.

```
Ruijie(config-router)# default-information originate always
```

Related

Command	Description

Commands

ip rip default-information	Notifies the default route through an interface.
redistribute	Redistributes the routes from other protocols to RIP.

Platform Description N/A

1.5 default-metric

Use this command to define the default RIP metric value. Use the **no** form of this command to restore the default setting.

default-metric *metric-value*

no default-metric

Parameter Description

Parameter	Description
metric-value	Indicates the default metric value with the range from 1 to 16. If the metric value is greater than or equal to 16, the RGNOS regards the route unreachable.

Defaults The default is 1.

Command Mode Routing process configuration mode

Usage Guide This command needs to work with the command **redistribute**. When the routes are redistributed to the RIP routing process from a routing protocol process, the route metric value cannot be converted due to the incompatibility of the metric calculation mechanisms for different protocols. During the conversion, therefore, it is required to redefine the metric values of redistributed routes in the RIP routing domain. If there is no clear definition of the metric value in redistributing a routing protocol process, the RIP uses the metric value defined with **default-metric**. If the metric value is defined, this value overwrites the metric value defined with default-metric. If this command is not configured, the default value of default-metric is 1.

Configuration Examples The following example enables the RIP routing protocol to redistribute the routes learned by the OSPF routing protocol, whose initial RIP metric value is set to 3.

```
Ruijie (config)# router rip
Ruijie (config-router)# default-metric 3
Ruijie (config-router)# redistribute ospf 100
```

Related Commands

Command	Description
redistribute	Redistributes the routes from one routing

	domain to another routing domain.

Platform Description N/A

1.6 distance

Use this command to set the management distance of the RIP route. Use the **no** form of this command to restore the default setting.

distance *distance* [*ip-address wildcard*]

no distance [*distance ip-address wildcard*]

Parameter Description

Parameter	Description
distance	Sets the management distance of a RIP route, an integer in the range from 1 to 255.
ip-address	Indicates the prefix of the source IP address of the route.
wildcard	Defines the comparison bit of the IP address, where 0 means accurate matching and 1 means no comparison.

Defaults The default is 120.

Command Mode Routing process configuration mode

Usage Guide Use this command to set the management distance of the RIP route.

You can use this command to create several management distances with source address prefixes. When the source address of the RIP route is within the range specified by the prefixes, the corresponding management distance is applied; otherwise, the route uses the management distance configured by the RIP.

Configuration Examples The following example sets the management distance of the RIP route to 160, and specifies the management distance of the route learned from 192.168.2.1 as 123.

```
Ruijie(config)# router rip
Ruijie(config-router)# distance 160
Ruijie(config-router)# distance 123 192.168.12.1 0.0.0.0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.7 distribute-list in

Use this command to control route update for route filtering. Use the **no** form of this command to restore the default setting.

distribute-list { [*access-list-number* | *name*] | **prefix** *prefix-list-name* [**gateway** *prefix-list-name*] | [**gateway** *prefix-list-name*] } **in** [*interface-type interface-number*]

no distribute-list { [*access-list-number* | *name*] | **prefix** *prefix-list-name* [**gateway** *prefix-list-name*] | [**gateway** *prefix-list-name*] } **in** [*interface-type interface-number*]

Parameter Description

Parameter	Description
access-list-number | *name*	Specifies the ACL. Only the routes that are allowed by the ACL can be accepted.
prefix *prefix-list-name*	Uses the prefix list to filter the routes.
gateway *prefix-list-name*	Uses the prefix list to filter the source of the routes.
interface-type interface-number	(Optional) Applies the distribution list only to a specified interface.

Defaults The distribution list is not defined by default.

Command Mode Routing process configuration mode

Usage Guide To deny receiving some specified routes, you can process all the received route update packets by configuring the route distribute control list.

Without any interface specified, the system will process the route update packets received on all the interfaces.

Configuration Examples The following example enables RIP to control the routes received from the Fastethernet 0/0, only permitting the routes starting with 172.16.

```
Ruijie (config)# router rip
Ruijie (config-router)# network 200.168.23.0
Ruijie (config-router)# distribute-list 10 in fastethernet 0/0
Ruijie (config-router)# no auto-summary
Ruijie (config-router)# access-list 10 permit 172.16.0.0 0.0.255.255
```

Related Commands

Command	Description
access-list	Defines the ACL rule.
prefix-list	Defines the prefix list.

Platform Description N/A

1.8 distribute-list out

Use this command to control route update advertisement for filtering routes. Use the **no** form of this command to restore the default setting.

distribute-list { [*access-list-number* | *name*] **| prefix** *prefix-list-name* } **out** [*interface* **|** [**bgp | connected | isis** [*area-tag*] **| ospf** *process-id* **| rip | static**]]

no distribute-list { [*access-list-number* | *name*] | **prefix** *prefix-list-name* } **out** [*interface* **|** [**bgp | connected | isis** [*area-tag*] **| ospf** *process-id* **| rip | static**]]

Parameter Description

Parameter	Description
access-list-number | *name*	Specifies the ACL.
prefix *prefix-list-name*	Uses the prefix list to filter routes.
interface	(Optional) Applies route update advertisement control to a specified interface in the distribution list.
bgp	(Optional) Applies route update advertisement control to only routes introduced from bgp in this distribution list.
connected	(Optional) Applies route update advertisement control to only connected routes in this distribution list.
isis [*area-tag*]	(Optional) Applies route update advertisement control to only routes introduced from ISIS in this distribution list. *area-tag* specifies an ISIS instance.
ospf *process-id*	(Optional) Applies route update advertisement control to only routes introduced from OSPF in this distribution list. *process-id* specifies an OSPF instance.
rip	(Optional) Applies route update advertisement control to only RIP routes in this distribution list.
static	(Optional) Applies route update advertisement control to only static routes in this distribution list.

Defaults No route update advertisement is configured by default.

Command Mode Routing process configuration mode

Usage Guide If this command relates to none of optional parameters, route update advertisement control applies to all interfaces. If this command relates to interface options, route update advertisement control applies to only the specified interface. If this command relates to other route process parameters, route update advertisement control applies to only the specific route process.

Configuration Examples The following example advertises only the 192.168.12.0/24 route.

```
Ruijie (config)# router rip
Ruijie (config-router)# network 200.4.4.0
Ruijie (config-router)# network 192.168.12.0
```

```
Ruijie (config-router)# distribute-list 10 out
Ruijie (config-router)# version 2
Ruijie (config-router)#access-list 10 permit 192.168.12.0 0.0.0.255
```

Related Commands

Command	Description
access-list	Defines the ACL rule.
prefix-list	Defines the prefix list.
redistribute	Configures route redistribution.

Platform Description N/A

1.9 enable mib-binding

Use this command to bind a MIB with a specified RIP instance. Use the **no** form of this command to restore the default setting

enable mib-binding

no enable mib-binding

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, the MIB is bound with the RIP instance of the default VRF.

Command Mode Routing process configuration mode.

Usage Guide As RIP MIB does not have RIP instance information, you can only operate only one RIP instance using SNMP. By default, RIP MIB is bound with the RIP instance of the default VRF. You can only operate this RIP instance. If you want to operate another RIP instance of a specified VRF through SNMP, you can use this command to bind the MIB with this instance.

Configuration Examples The following example operates the RIP instance of a specified VRF, vpn1.

```
Ruijie(config)# router rip
Ruijie(config-router)# address-family ipv4 vrf vpn1
Ruijie(config-router-af)# enable mib-binding
```

Related Commands

Command	Description
show ip rip	Displays the global configuration of RIP.

Platform N/A

Description

1.10 exit-address-family

Use this command to exit the address family configuration mode

exit-address-family

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Address family configuration mode

Usage Guide Use this command to exit the address family configuration mode.
The abbreviation of this command is exit.

Configuration Examples The following example enters or exits the address family configuration mode.

```
Ruijie(config-router)# address-family ipv4 vrf vpn1
Ruijie(config-router-af)# exit-address-family
```

Related Commands

Command	Description
address-family	Enters the address family configuration sub-mode.

Platform Description N/A

1.11 fast-reroute

Use this command to enable the RIP FRR (Fast Reroute) function for the device. Use the **no** form of this command to restore the default setting.

fast-reroute route-map *route-map-name*

no fast-reroute

Parameter Description

Parameter	Description
route-map-name	Specifies the backup path through the route map.

Defaults This function is disabled by default.

Command Mode Routing process configuration mode

Usage Guide Use the **route-map** command to specify the backup path for the matched routes.
It is recommended to enable the BFD function when the RIP fast reroute function is enabled. BFD allows the device to detect the link fault faster, so as to reduce the interruption time. In the scenario where the port is up/down, it is recommended to configure **carrier-delay** *0* in interface configuration mode to achieve the fastest switchover speed, reducing the interruption time.
Currently, the restrictions of the RIP FRR are as follows:
Only one backup next hop is generated for each route.
The backup next hop is not generated for the ECMP route.

Configuration Examples The following example enables FRR for RIP instance 1 and associates route map *fast reroute*.

```
Ruijie(config)# route-map fast-reroute
match interface gigabitEthernet 0/2
set fast-reroute backup-interface GigabitEthernet 0/1 backup-nexthop
192.168.1.1
Ruijie(config)# router rip
Ruijie(config-router)# fast-reroute route-map fast-reroute
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.12 graceful-restart

Use this command to configure the RIP graceful restart (GR) function for a device. Use the **no** form of this command to restore the default configuration.
graceful-restart [**grace-period** *grace-period*]
no graceful-restart [**grace-period**]

Parameter Description

Parameter	Description
graceful-restart	Enables the GR function.
grace-period	(Optional) Configures the grace period.
grace-period	(Optional) Indicates the user-defined GR period. The default value is the smaller value between twice the update time and 60 seconds. The range is from 1 to 1,800. The unit is second.

Defaults This function is enabled by default.

Command Mode Routing process configuration mode

Usage Guide The GR function is configured on the RIP instances. Different parameters can be configured for different RIP instances.
The GR period refers to the time from the startup to the end of RIP GR. During this period, the forwarding table remains unchanged and the RIP route is restored to the state before protocol restart. When the GR period expires, RIP exits the GR state and performs normal RIP operation.
The **graceful-restart grace-period** command enables users to modify GR period. Note: Make sure that GR is completed before the RIP route is validate and after an RIP route update cycle elapses. If an improper value is configured, non-stop data forwarding cannot be ensured during the GR process. For example, if the GR period is longer than the time when the neighbor's route is unavailable and GR is not completed before the route is validated, then the neighbor is not re-informed of the route and forwarding of the neighbor's route is terminated when it is validated, which results in data forwarding interruption. Therefore, unless otherwise specified, it is not recommended to adjust the GR period. If the period needs to changed, determine that the grace period is longer than the route update cycle and shorter than the time when the route is unavailable in combination with the configuration of the **timers basic** command.

⚠ During the RIP GR period, the network must be stable.

Configuration Examples The following example enables the RIP GR function and configures the GR period parameters of the GR function.

```
Ruijie(config)# router rip
Ruijie(config-router)# graceful-restart grace-period 90
```

Related Commands

Command	Description
timers basic	Configures RIP timers.

Platform Description N/A

1.13 ip rip authentication key-chain

Use this command to enable RIP authentication and specify the keychain used for RIP authentication. Use the **no** form of this command to restore the default setting.
ip rip authentication key-chain *name-of-keychain*
no ip rip authentication key-chain

Parameter

Parameter	Description

Description

name-of-keychain	Indicates the name of the keychain, which specifies the keychain used for RIP authentication.

Defaults The keychain is not associated by default.

Command Mode Interface configuration mode

Usage Guide If the keychain is specified in the interface configuration, use the key chain global configuration command to define the keychain. Otherwise, RIP data packet authentication fails.
RIPv2 instead of RIPv1 supports authentication of the RIP data packet.

Configuration Examples The following example enables RIP authentication on the fastEthernet 0/1 with the associated keychain ripchain.

```
Ruijie (config)#interface fastEthernet 0/1
Ruijie (config-if-FastEthernet 0/1)#ip rip authentication key-chain ripchain
```

Meanwhile, use the **key chain** command to define this keychain in global configuration mode.

```
Ruijie(config)#key chain ripchain
Ruijie(config-keychain)#key 1
Ruijie(config-keychain-key)#key-string Hello
```

Related Commands

Command	Description
ip rip authentication mode	Defines the RIP authentication mode.
ip rip authentication text-password	Enables RIP authentication, and sets the password string of RIP plaintext authentication. RIP data packet authentication is supported only by RIPv2.
ip rip receive version	Defines the version of RIP packets received on the interface.
ip rip send version	Defines the version of RIP packets sent on the interface.
key chain	Defines the keychain and enters keychain configuration mode.

Platform Description N/A

1.14 ip rip authentication mode

Use this command to define the RIP authentication mode. Use the **no** form of this command to restore the default setting.
ip rip authentication mode { **text | md5** }

no ip rip authentication mode

Parameter Description

Parameter	Description
text	Configures RIP authentication as plaintext authentication.
md5	Configures RIP authentication as MD5 authentication.

Defaults It is plaintext authentication by default.

Command Mode Interface configuration mode

Usage Guide During the RIP authentication configuration process, the RIP authentication modes of all devices requiring exchange of RIP routing information must be the same. Otherwise, RIP packet exchange will fail.
If the plaintext authentication mode is adopted, but the password string of the plaintext authentication or the associated keychain is not configured, no authentication occurs. In the same way, if the MD5 authentication mode is adopted, but the associated keychain is not configured, no authentication occurs.
RIPv2 instead of RIPv1 supports authentication of the RIP data packet.

Configuration Examples The following example configures the RIP authentication mode on the fastEthernet 0/1 as MD5.

```
Ruijie (config)#interface fastEthernet 0/1
Ruijie (config-if-FastEthernet 0/1)# ip rip authentication mode md5
```

Related Commands

Command	Description
ip rip authentication key-chain	Enables the RIP authentication mode and specifies the keychain used for RIP authentication. Only RIPv2 supports authentication of the RIP data packet.
ip rip authentication text-password	Enables the RIP authentication mode, and sets the password string of RIP plaintext authentication. Only RIPv2 supports authentication of the RIP data packet.
key chain	Defines the keychain and enters the keychain configuration mode

Platform Description N/A

1.15 ip rip authentication text-password

Use this command to enable RIP authentication and set the password string of RIP plaintext

authentication. Use the **no** form of this command to restore the default setting.

ip rip authentication text-password [**0** | **7**] *password-string*

no ip rip authentication text-password

Parameter Description

Parameter	Description
0	Specifies that the key is displayed as plaintext.
7	Specifies that the key is displayed as cipher text.
password-string	Indicates the password string of the plaintext authentication, in the length of 1-16 bytes.

Defaults No password string of RIP plaintext authentication is configured by default.

Command Mode Interface configuration mode

Usage Guide This command works only in plaintext authentication mode.

To enable the RIP plaintext authentication function, use this command to configure the corresponding password string, or use the associated key chain to obtain the password string. The latter takes the precedence over the former one.

RIPv1 does not support RIP authentication but RIPv2 does.

Configuration Examples The following example enables the RIP plaintext authentication on fastEthernet 0/1 and sets the password string to hello.

```
Ruijie(config)#interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# ip rip authentication text-password hello
```

Related Commands

Command	Description
ip rip authentication mode	Defines the RIP authentication mode.
ip rip authentication key-chain	Enables the RIP authentication mode and specifies the keychain used for RIP authentication. Only RIPv2 supports authentication.

Platform Description N/A

1.16 ip rip bfd

Use the ip rip bfd [**disable**] command to configure the specified interface running RIP to enable or disable link detection using the BFD. Use the **no** form of this command to restore the default setting.

ip rip bfd [**disable**]

no ip rip bfd

Parameter Description

Parameter	Description
disable	Disables the specified interface running RIP and uses the BFD mechanism to perform link detection.

Defaults Interfaces running RIP are not configured by default. The BFD configuration in RIP process configuration mode is a reference.

Command Mode Interface configuration mode

Usage Guide The priority of the interface is higher that of the bfd all-interfaces command in process configuration mode.
You can use the **ip rip bfd** command to enable the BFD to perform link detection on the specified interface according to the actual environment or use the **bfd all-interfaces** command to configure all interfaces running RIP and enable the BFD to perform link detection. In addition, you can use the **ip rip bfd disable** command to disable the BFD detection function on the specified interface.

Configuration Examples N/A

Related Commands

Command	Description
route ip	Enables the RIP routing process and enters the routing process configuration mode.
bdf all-interfaces	Configures all interfaces running RIP to use the BFD to perform link detection.

Platform Description N/A

1.17 ip rip default-information

Use this command to advertise the default route through a RIP interface. Use the **no** form of this command to restore the default setting.
ip rip default-information { **only** | **originate** } [**metric** *metric-value*]
no ip rip default-information

Parameter Description

Parameter	Description
only	Notifies the default route rather than other routes.
originate	Notifies the default route and other routes.

metric *metric-value*	Specifies the metric value of the default route, in the range from1 to 15.

Defaults No default route is configured by default. The default metric value is 1.

Command Mode Interface configuration mode

Usage Guide After you configure this command on a specified interface, a default route is generated and notified through the interface. If the **ip rip default-information** command of the interface and the **default-information originate** command of the RIP process are configured at the same time, only the default route of the interface is advertised.

RIP will no longer learn the default route notified by the neighbor if any interface is configured with the ip rip default-information command.

Configuration Examples The following example creates a default route which is notified on ethernet0/1 only.

```
Ruijie(config)#interface ethernet 0/1
Ruijie(config-if-Ethernet 0/1)#ip rip default-information only
```

Related Commands

Command	Description
default-information originate	Generates a default route in the RIP process.

Platform Description N/A

1.18 ip rip receive enable

Use this command to enable RIP to receive the RIP data package on a specified interface. Use the **no** form of this command to restore the default setting.

ip rip receive enable

no ip rip receive enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults RIP packages can be received through the interface by default.

Command Mode Interface configuration mode

Usage Guide To prevent an interface from receiving RIP packets, use the no form of this command in interface configuration mode. This command works on interfaces configured with this command. You can use the **default** form of this command to enable the interface to receive the RIP data package.

Configuration Examples The following example prohibits receiving RIP data packages on fastEthernet 0/1.

```
Ruijie (config)# interface fastEthernet 0/1
Ruijie (config-if-FastEthernet 0/1)# no ip rip receive enable
```

Related Commands

Command	Description
ip rip send enable	Enables or disables the interface to send RIP data packages.
passive-interface	Configures a passive RIP interface.

Platform Description N/A

1.19 ip rip receive version

Use this command to define the version of RIP packets received on an interface. Use the **no** form of this command to restore the default setting.

ip rip receive version [**1**] [**2**]

no ip rip receive version

Parameter Description

Parameter	Description
1	(Optional) Receives only RIPv1 packets.
2	(Optional) Receives only RIPv2 packets.

Defaults The default behavior depends on the configuration with the version command.

Command Mode Interface configuration mode

Usage Guide This command overwrites the default configuration of the **version** command. It affects only RIP packet receiving through the interface and allows RIPv1 and RIPv2 packets to be received on the interface at the same time. If the command is configured without parameters, data package receiving depends on the configuration of the version.

Configuration Examples The following example enables receiving both RIPv1 and RIPv2 data packages.

```
Ruijie (config)#interface fastEthernet 0/1
Ruijie (config-if-FastEthernet 0/1)# ip rip receive version 1 2
```

Related

Command	Description

Commands

version	Defines the default version of the RIP packets received/sent on the interface.

Platform Description N/A

1.20 ip rip send enable

Use this command to enable RIP to send a RIP data package on a specified interface. Use the **no** form of this command to restore the default setting.

ip rip send enable

no ip rip send enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults RIP packages can be sent through the interface by default.

Command Mode Interface configuration mode

Usage Guide To prevent an interface from sending RIP packets, use the **no** form of this command in interface configuration mode. This command works on interfaces configured with this command. You can use the **default** form of this command to enable the interface to send the RIP data package.

Configuration Examples The following example prohibits sending RIP data packages on fastEthernet 0/1.

```
Ruijie (config)# interface fastEthernet 0/1
Ruijie (config-if-FastEthernet 0/1)# no ip rip send enable
```

Related Commands

Command	Description
ip rip receive enable	Enables or disables receiving RIP packets on the interface.
passive-interface	Configures a passive RIP interface.

Platform Description N/A

1.21 ip rip send supernet-routes

Use this command to enable RIP to send the supernet route on a specified interface. Use the **no** form

of this command to disable this function.

ip rip send supernet-routes

no ip rip send supernet-routes

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode Interface configuration mode

Usage Guide When the RIPv1 router monitors a RIPv2 router response packet and if the supernet routing information is monitored, incorrect route information is learned because the RIPv1 ignores the subnet mask of the routing information. In this case, you are advised to use the no form of this command on the RIPv2 router to disable advertising the supernet route on the corresponding interface. This command works only on interfaces configured with this command.

This command is only valid upon sending the RIPv2 packets on the interface and it is used to control sending the supernet route.

Configuration Examples The following example disables sending RIP supernet routes on the fastEthernet 0/1 interface.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# no ip rip send supernet-routes
```

Related Commands

Command	Description
version	Defines the RIP version
ip rip send enable	Enables or disables sending the RIP package on the interface.

Platform Description N/A

1.22 ip rip send version

Use this command to define the version of the RIP packets sent on the interface. Use the **no** form of this command to restore the default setting.

ip rip send version [**1**] [**2**]

no ip rip send version

Parameter Description

Parameter	Description

1	(Optional) Receives only RIPv1 packets.
2	(Optional) Receives only RIPv2 packets.

Defaults The default behavior depends on the configuration with the version command.

Command Mode Interface configuration mode

Usage Guide This command overwrites the default configuration of the **version** command. It affects only RIP packet sending through the interface and allows RIPv1 and RIPv2 packages sent on the interface at the same time. If the command is configured without parameters, package receiving depends on the configuration of the version.

Configuration Examples The following example enables sending both RIPv1 and RIPv2 packages on the fastEthernet 0/1 interface.

```
Ruijie (config)# interface fastEthernet 0/1
Ruijie (config-if-FastEthernet 0/1)# ip rip send version 1 2
```

Related Commands

Command	Description
version	Defines the default version of the RIP packets received/sent on the interfaces.

Platform Description N/A

1.23 ip rip split-horizon

Use this command to enable split horizon. Use the **no** form of this command to disable this function.
ip rip split-horizon [**poisoned-reverse**]
no ip rip split-horizon [**poisoned-reverse**]

Parameter Description

Parameter	Description
poisoned-reverse	(Optional) Enables split horizon with poisoned reverse.

Defaults This function is enabled by default.

Command Mode Interface configuration mode

Usage Guide When multiple devices are connected to the IP broadcast network and run a distance vector routing protocol, the split horizon mechanism is required to prevent loop. The split horizon prevents the

device from advertising routing information from the interface that learns that information, which optimizes routing information exchange between multiple devices.
For non-broadcast multi-path access networks (such as frame relay and X.25), split horizon may cause some devices to be unable to learn all routing information. Split horizon may need to be disabled in this case. If an interface is configured the secondary IP address, attentions shall be paid also for split horizon.
If the **poisoned-reverse** parameter is configured, split horizon with poisoned reverse is enabled. In this case, devices still advertise the route information through the interface from which the route information is learned. However, the metric value of the route information is set to unreachable.
The RIP routing protocol is a distance vector routing protocol, and the split horizon issue shall be cautioned in practical applications. If it is unsure whether split horizon is enabled on the interface, use the show ip rip command to judge. This function makes no influence on the neighbor defined with the **neighbor** command.

Configuration Examples The following example disables the RIP split horizon function on the interface fastethernet 0/0.

```
Ruijie (config)# interface fastethernet 0/0
Ruijie (config-if)# no ip rip split-horizon
```

Related Commands

Command	Description
neighbor (RIP)	Defines the IP address of the neighbor of RIP.
validate-update-source	Enables the source address authentication of the RIP route update message.

Platform Description N/A

1.24 ip rip summary-address

Use this command to configure port-level convergence through an interface. Use the **no** form of this command to disable this function.
ip rip summary-address *ip-address ip-network-mask*
no ip rip summary-address *ip-address ip-network-mask*

Parameter Description

Parameter	Description
ip-address	Indicates the IP addresses to be converged.
ip-network-mask	Indicates the subnet mask of the specified IP address for route convergence.

Defaults The RIP routes are automatically converged to the classful network edge by default.

Command Mode Interface configuration mode

Usage Guide The **ip rip summary-address** command converges an IP address or a subnet on a specified port. RIP routes are automatically converged to the classful network edge. The classful subnet can be configured through only port convergence.

The summary range configured by this command cannot be a super class network, that is, the configured mask length is greater than or equal to the natural mask length of the network.

Configuration Examples The following example disables the automatic route convergence function of RIPv2. Interface convergence is configured so that fastEthernet 0/1 advertises the converged route 172.16.0.0/16.

```
Ruijie (config)# interface fastEthernet 0/1
Ruijie (config-if-FastEthernet 0/1)# ip rip summary-address 172.16.0.0
255.255.0.0
Ruijie (config-if-FastEthernet 0/1)# ip address 172.16.1.1 255.255.255.0
Ruijie (config)# router rip
Ruijie (config-router)# network 172.16.0.0
Ruijie (config-router)# version 2
Ruijie (config-router)# no auto-summary
```

Related Commands

Command	Description
auto-summary	Enables the automatic convergence of RIP routes.

Platform Description N/A

1.25 ip rip triggered

Use this command to enable triggered RIP based on links. Use the **no** form of this command to restore the default setting.

ip rip triggered

ip rip triggered retransmit-timer *timer*

ip rip triggered retransmit-count *count*

no ip rip triggered

no ip rip triggered retransmit-timer

no ip rip triggered retransmit-count

Parameter Description

Parameter	Description
retransmit-timer *timer*	Configures the interval at which the Update Request and Update Response packets are retransmitted. The range is from 1 to 3,600. The unit is second. The default is five.
retransmit-count *count*	Configures the maximum times that the Update Request and Update

	Response packets are retransmitted. The range is from 1 to 3600. The default is 36.

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide Triggered RIP (TRIP) is the extension of RIP on the wide area network (WAN), mainly used for demand-based links.

With the TRIP function enabled, RIP no longer sends route updates periodically and sends route updates to the WAN interface only if:

Update Request packets are received.

RIP routing information is changed.

Interface state is changed.

The router is started.

As periodical RIP update is disabled, the confirmation and retransmission mechanism is required to ensure that update packets are sent and received successfully over the WAN. The **retransmit-timer** and **retransmit-count** commands can be used to specify the retransmission interval and maximum retransmission times for request and update packets.

- The function can be enabled in the case of the following conditions: a) The interface has only one neighbor. b) There are multiple neighbors but they interact information using unicast packets. You are advised to enable the function for link layer protocols such as PPP, frame relay, and X.25.
- You are advised to enable split horizon with poison reverse on the interface enabled with the function; otherwise invalid routing information might be left.
- Make sure that the function is enabled on all routers on the same link; otherwise the function will be invalid and the routing information cannot be exchanged correctly.
- The function cannot be enabled at the same time with BFD and RIP functions.
- To enable the function, make sure that the RIP configuration is the same on both ends of the link, such as RIP authentication and the RIP version supported by the interface.
- If this function is enabled on this interface, the source address of packets on this interface will be checked no matter whether the source IP address verification function (validate-update-source) is enabled.

Configuration Examples The following example enables TRIP and sets the retransmission interval and maximum retransmission time to 10 seconds and 18 respectively for Update Request and Update Response packets.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# ip rip triggered
Ruijie(config-if-FastEthernet 0/1)# ip rip triggered retransmit-timer 10
```

```
Ruijie(config-if-FastEthernet 0/1)# ip rip triggered retransmit-count 18
```

Related Commands

Command	Description
show ip rip database	Displays the summarized routing information of the RIP database.
show ip rip interface	Displays the RIP interface information.
ip rip split-horizon	Configures RIP split horizon.

Platform Description N/A

1.26 ip rip v2-broadcast

Use this command to send RIPv2 packets in broadcast rather than multicast mode. Use the **no** form of this command to restore the default setting.

ip rip v2-broadcast

no ip rip v2-broadcast

Parameter Description

Parameter	Description
N/A	N/A

Defaults The default behavior depends on the configuration of the version command.

Command Mode Interface configuration mode

Usage Guide This command overwrites the default of the **version** command. This command affects only sending RIP packets on the interface. This command allows RIPv1 and RIPv2 packages sent on the interface simultaneously. If this command is configured without parameters, package receiving depends on the version setting.

Configuration Examples The following example sends RIPv2 packets in broadcast mode on the fastEthernet 0/1 interface.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# no ip rip split-horizon
```

Related Commands

Command	Description
version	Defines the default version of the RIP packets received and sent on the interface.

Platform Description N/A

1.27 neighbor

Use this command to define the IP address of a RIP neighbor. Use the **no** form of this command to restore the default setting.

neighbor *ip-address*

no neighbor *ip-address*

Parameter Description

Parameter	Description
ip-address	Indicates the IP address of the neighbor. The IP address must be that of the network connected to the local device.

Defaults The neighbor is not defined by default.

Command Mode Routing process configuration mode

Usage Guide By default, RIPv1 uses the IP broadcast address (255.255.255.255) to advertise routing information, and RIPv2 uses the multicast address 224.0.0.9 to do so. If you do not want to allow all the devices on the broadcast network or non-broadcast multi-path access network to receive routing information, use the **passive-interface** command to configure related interfaces as passive interfaces and then define only some neighbors who can receive the routing information. This command has no impact on the receiving of RIP information. The passive interface is configured. No request packet is sent after the interface is enabled.

Configuration Examples The following example creates a VRF with the name of vpn1 and creates its RIP instance.

```
Ruijie(config)# ip vrf vpn1
Ruijie(config-vrf)# exit
Ruijie(config)# interface fastEthernet 1/0
Ruijie(config-if-FastEthernet 0/1)# ip vrf forwarding vpn1
Ruijie(config-if-FastEthernet 0/1)# ip address 192.168.1.1 255.255.255.0
Ruijie(config)# router rip
Ruijie(config-router)# address-family ipv4 vrf vpn1
Ruijie(config-router)# network 192.168.1.0
Ruijie(config-router)# exit-address-family
```

Related Commands

Command	Description
passive-interface	Configures the interface as a passive interface.

Platform Description N/A

1.28 network

Use this command to define the list of networks to be advertised in the RIP routing process. Use the **no** form of this command to delete the defined network.

network *network-number* [*wildcard*]

no network *network-number* [*wildcard*]

Parameter Description

Parameter	Description
network-number	Indicates the network number of the directly-connected network. The network number is a natural one. All interfaces whose IP addresses belong to that natural network can send/receive RIP packages.
wildcard	Defines the IP address comparing bit: 0 refers to accurate matching, and 1 refers to no comparison.

Defaults N/A

Command Mode Routing process configuration mode

Usage Guide The *network-number* and *wildcard* parameters can be configured simultaneously to enable the IP address of the interface within the IP address range to join RIP running.

Without the *wildcard* parameter, RGOS make the interface IP address within the classful address range join the RIP running.

Only when the IP address of an interface is in the network list defined by RIP, RIP route update packets can be received and sent on the interface.

Configuration Examples The following example defines two network numbers associated with RIP and allows the interface IP address between 192.168.12.0/24 and 172.16.0.0/24 to join RIP running.

```
Ruijie (config)# router rip
Ruijie (config-router)# network 192.168.12.0
Ruijie(config-router)# network 172.16.0.0 0.0.0.255
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.29 offset-list

Use this command to increase the metric value of received or sent RIP routes. Use the **no** form of this

command to restore the default setting.

offset-list { *access-list-number* | *name* } { **in** | **out** } *offset* [*interface-type interface-number*]

no offset-list { *access-list-number* | *name* } { **in** | **out** } *offset* [*interface-type interface-number*]

Parameter Description

Parameter	Description
access-list-number | *name*	Specifies the ACL.
in	Modifies the metric of the received routes using the ACL.
out	Modifies the metric of the sent routes using the ACL.
offset	Indicates the offset of changed metric values. The value is in the range from 0 to16.
interface-type	Applies the ACL to a specified interface.
interface-number	Specifies the interface number.

Defaults No offset is specified by default.

Command Mode Routing process configuration mode

Usage Guide If a RIP route matches against both the offset-list of the specified interface and the global offset-list, it will increase the metric value of the offset-list of the specified interface.

Configuration Examples The following example increases the metric of the RIP routes by 7 in the range specified by ACL 7.

```
Ruijie (config-router)# offset-list 7 out 7
```

The following example increases the metric of the RIP routes by 7 in the range specified by ACL 7 and learned by fastethernet 0/1.

```
Ruijie (config-router)# offset-list 8 in 7 fastethernet 0/1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.30 output-delay

Use this command to modify the delay to send RIP update packets. Use the **no** form of this command to restore the default setting.

output-delay *delay*

no output-delay

Parameter

Parameter	Description

Description

delay	Sets the delay to send RIP update packets, in the range from 8 to 50 in the unit of milliseconds.

Defaults No sending delay is configured by default.

Command Mode Routing process configuration mode

Usage Guide In normal cases, the size of a RIP update packet is 512 bytes including 25 routes. If the number of updated routes is greater than 25, update packets will be sent through multiple routes. Note that the update packets should be sent as fast as possible.
However, when a high-speed device sends a large number of packets to a low-speed device, the low-speed device may not process all the packets timely, resulting in packet loss. In this case, you can use this command to increase the delay to send packets on the high-speed device so that the low-speed device can process all the update packets.

Configuration Examples The following example sets the delay to send RIP update packets to 30 milliseconds.

```
Ruijie(config)# router rip
Ruijie(config-router)# output-delay 30
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.31 passive-interface

Use this command to disable the function of sending update packets on an interface. Use the **no** form of this command to restore the default setting.
passive-interface { **default |** *interface-type interface-num* }
no passive-interface { **default |** *interface-type interface-num* }

Parameter Description

Parameter	Description
default	Sets all interfaces to the passive interfaces.
interface-type interface-num	Indicates the interface type and number.

Defaults Interfaces are set to the non passive interfaces by default.

Command Routing process configuration mode

Mode

Usage Guide The **passive-interface default** command sets all interfaces to the passive interfaces. You can use **no passive-interface** *interface-type interface-num* command to set specified interfaces as non-passive interfaces.
After you set an interface to the passive interface, RIP route update packets will no longer be sent but can be received through the interface. In this case, route update packets can be sent to a specified neighbor through the interfaces by using the **neighbor** command. You can use the **ip rip send enable** and **ip rip receive enable** commands to control whether route update packets can be sent or received through the interface.

Configuration Examples The following example sets all interfaces to the passive interfaces and then sets ethernet0/1 to the non-passive interface.

```
Ruijie(config-router)# passive-interface default
Ruijie(config-router)# no passive-interface gigabitEthernet 0/1
```

Related Commands

Command	Description
ip rip receive enable	Enables or disables receiving RIP packets on the interface.
ip rip send enable	Enables or disables sending RIP packets on the interface.

Platform Description N/A

1.32 redistribute

Use this command to redistribute external routes in route configuration mode. Use the **no** form of this command to restore the default setting.
redistribute { **bgp** | **connected** | **isis** [*area-tag*] | **ospf** *process-id* | **static** } [{ **level-1** | **level-1-2** | **level-2** }] [**match** { **internal** | **external** [**1|2**] | **nssa-external** [**1|2**] }] [**metric** *metric-value*] [**route-map** *route-map-name*]
no redistribute { **bgp** | **connected** | **isis** [*area-tag*] | **ospf** *process-id* | **static** } [{ **level-1** | **level-1-2** | **level-2** }] [**match** { **internal** | **external** [**1|2**] | **nssa-external** [**1|2**] }] [**metric** *metric-value*] [**route-map** *route-map-name*]

Parameter Description

Parameter	Description
bgp	Is redistributed from bgp.
connected	Is redistributed from a connected route.
isis *area-tag*	Is redistributed from ISIS and specifies an ISIS instance through area-tag.
ospf *process-id*	Is redistributed from OSPF and specifies an OSPF instance through

	process-id. The value is in the range from 1 to 65535.
static	Is redistributed from static routes.
level-1 | level-1-2 | level-2	Is used when ISIS route redistribution is configured and specifies a route with a specific level for redistribution.
match	Is used when OSPF route redistribution is configured and filters a route with a specific level for redistribution.
metric *metric-value*	Sets the metric value of the redistributed route and specifies the metric value by using the metric-value parameter. The value is in the range from 1 to 16.
route-map *route-map-name*	Sets the redistribution filtering rule.

Defaults By default:
All the routes of the sub types of the instance are redistributed when you configure redistributing OSPF.
The routes of Level-2 sub-types of the instance are redistributed when you configure ISIS redistribution.
All the routes of the protocol are redistributed for other routing protocols.
The metric of the redistributed routes is 1 by default.
The route-map is not associated.

Command Mode Routing process configuration mode

Usage Guide This command is executed to redistribute external routes to RIP.
It is unnecessary to convert the metric of one routing protocol into that of another routing protocol for route redistribution, since different routing protocols use different metric measurement methods. For RIP, the metric value is calculated based on hop counts; for OSPF, the metric value is calculated based on bandwidths. Therefore, their metrics are not comparable. However, a symbolic metric value must be set for route redistribution. Otherwise, route redistribution will fail.
When you configure ISIS route redistribution without the level parameter, only level-2 routes are redistributed by default. If the redistribution configuration is initialized with the level parameter, then all routes with level configured are redistributed. When the configuration is saved and level 1 and level 2 are configured at the same time, level 1 and level 2 are combined into the level-1-2 parameter to be saved.
When you configure redistribution of OSPF routes without the match parameter, the OSPF routes of all sub types are redistributed by default. Then the first configured match parameter is used as the original one. Only the routes matching the specific type can be redistributed. The no form of this command restores the setting to the default value.
The rule of configuring the no form of the redistribute command is as follows:
1. If the no form of this command specifies certain parameters, the parameters must be restored to the default configuration.
2. If the **no** form of this command does not specify any parameter, the command must be deleted.
Assume that the following configurations are available.
redistribute isis 112 level-2

You can use the no redistribute isis 112 level-2 command to modify the configuration.
According to the preceding rule, this command only restores the level-2 parameter to the default value. However, level-2 is also the default parameter value. Therefore, the configuration is still be saved as redistribute isis 112 level-2 after you use the no form of this command.
To delete this command, use the following command:
no redistribute isis 112

⚠ The redistribute command cannot redistribute the default route of other protocol to the RIP process. To this end, use the **default-information originate** command.

Configuration Examples The following example redistributes static routes to RIP.

```
Ruijie(config-router)# redistribute static
```

Related Commands

Command	Description
default-metric *metric*	Sets the default metric of the route to be redistributed.
default-information originate	Generates the default route in the RIP process.

Platform Description N/A

1.33 router rip

Use this command to create the RIP routing process and enter the routing process configuration mode. Use the **no** form of this command to restore the default setting.
router rip
no router rip

Parameter Description

Parameter	Description
N/A	N/A

Defaults No RIP process is running by default.

Command Mode Global configuration mode

Usage Guide One RIP routing process must be defined with one network number. If a dynamic routing protocol runs on asynchronous lines, configure the **async default routing** command on the asynchronous interface.

Configuration Examples The following example creates the RIP routing process and enters the routing process configuration mode.

```
Ruijie (config)# router rip
Ruijie(config-router)#
```

Related Commands

Command	Description
network (RIP)	Defines the network number of the RIP process.

Platform Description N/A

1.34 show ip rip

Use this command to display the RIP process information.

show ip rip [**vrf** *vrf-name*]

Parameter Description

Parameter	Description
vrf *vrf-name*	(Optional) Displays the RIP information with the specified VRF.

Defaults N/A

Command Mode Privileged EXEC mode/ Global configuration mode/ Routing process configuration mode

Usage Guide It is used to display the three timers, routing distribution status, routing re-distribution status, interface RIP version, RIP interface and network range, metric, and distance of the RIP process quickly. If the VRF is specified, the name of VRF and VRF ID are displayed.

Configuration Examples The following example displays the basic information of the RIP process such as the update time and management distance.

```
Ruijie#show ip rip
Routing Protocol is "rip"
  Sending updates every 10 seconds, next due in 4 seconds
  Invalid after 20 seconds, flushed after 10 seconds
  Outgoing update filter list for all interface is: not set
  Incoming update filter list for all interface is: not set
  Default redistribution metric is 2
  Redistributing: connected
  Default version control: send version 2, receive version 2
    Interface            Send  Recv
    FastEthernet 0/1      2    2
    FastEthernet 0/2      2    2
  Routing for Networks:
```

```
    192.168.26.0 255.255.255.0
    192.168.64.0 255.255.255.0
  Distance: (default is 50)
```

The following example specifies the VRF and displays the corresponding basic information of RIP instance.

```
Ruijie(config-router)# sh ip rip vrf 1
VRF 1  VRF-id:1
Routing Protocol is "rip"
  Sending updates every 30 seconds, next due in 4 seconds
  Invalid after 180 seconds, flushed after 120 seconds
  Outgoing update filter list for all interface is: not set
  Incoming update filter list for all interface is: not set
  Default redistribution metric is 1
  Redistributing:
  Default version control: send version 1, receive any version
  Routing for Networks:
  Distance: (default is 120)
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.35 show ip rip database

Use this command to display the route summary information in the RIP routing database.

show ip rip database [**vrf** *vrf-name*] [*network-number network-mask*] [**count**]

no address-family ipv4 vrf *vrf-name*

Parameter Description

Parameter	Description
vrf *vrf-name*	(Optional) Displays the RIP routing information of specified VRF.
network-number	(Optional) Indicates the ID of the subnet on which route information is to be displayed.
network-mask	Indicates the subnet mask. It must be specified if the network number is specified.
count	(Optional) Displays the abstract of the route statistics in the RIP database.

Defaults N/A

Command Mode Privileged EXEC mode/ Global configuration mode/ Routing process configuration mode

Usage Guide Only when the related sub-routes are converged, the converged address entries appear in the RIP routing database. When the last sub-route information in the converged address entries becomes invalid, the converged address information will be deleted from the database.

Configuration Examples The following example displays all converged address entries in the RIP routing database.

```
Ruijie# show ip rip database
192.168.1.0/24    auto-summary
192.168.1.0/30    directly connected, Loopback 3
192.168.1.8/30    directly connected, FastEthernet 0/1
192.168.121.0/24    auto-summary
192.168.121.0/24    redistributed
[1] via 192.168.2.22, FastEthernet 0/2
192.168.122.0/24    auto-summary
192.168.122.0/24
[1] via 192.168.4.22, Serial 0/1  00:28    permanent
```

The following example displays the converged address entries related with 192.168.121.0/24 in the RIP routing database.

```
Ruijie# show ip rip database 192.168.121.0 255.255.255.0
192.168.121.0/24    redistributed
[1] via 192.168.2.22, FastEthernet 0/1
```

The following example displays the statistical information summary of various routes in the RIP routing database.

```
Ruijie# show ip rip database count
              All    Valid   Invalid
database       5      5      0
auto-summary    5      5      0

connected      1      1      0
rip            4      4      0
```

Related Commands

Command	Description
show ip rip	Displays the information of the currently-running routing protocol process.

Platform Description N/A

1.36 show ip rip external

Use this command to display the information of the external routes redistributed by the RIP protocol.

show ip rip external [**bgp | connected | isis** [*process-id*] | **ospf** *process-id* | **static**] [**vrf** *vrf-name*]

Parameter Description

Parameter	Description
bgp	Displays redistributed BGP routes.
connected	Displays redistributed directly-connected routes.
isis *process-id*	Displays redistributed ISIS routes. The process-id parameter indicates ISIS process ID.
ospf *process-id*	Displays redistributed OSPF routes. The process-id parameter indicates OSPF process ID. The range is from 1 to 65535.
static	Displays redistributed static routes.
vrf *vrf-name*	Displays the RIP external route of the specified VRF (optional).

Defaults N/A

Command Mode Privileged EXEC mode/ Global configuration mode/ Routing process configuration mode

Usage Guide N/A

Configuration Examples The following example displays direct routes redistributed by the RIP process.

```
Ruijie# show ip rip external connected
Protocol connected route:
[connected] 1.0.0.0/8 metric=0
nhop=0.0.0.0, if=2
[connected] 3.0.0.0/8 metric=0
nhop=0.0.0.0, if=16391
[connected] 4.4.0.0/16 metric=0
nhop=0.0.0.0, if=16388
[connected] 5.0.0.0/8 metric=0
nhop=0.0.0.0, if=16386
[connected] 192.168.195.0/24 metric=0
nhop=0.0.0.0, if=1
```

Related Commands

Command	Description
show ip rip	Displays the information of the currently running routing protocol process.
ip vrf	Creates a VRF.

Platform Description N/A

1.37 show ip rip interface

Use this command to display the RIP interface information.

show ip rip interface [**vrf** *vrf-name*] [*interface-type interface-number*]

Parameter Description

Parameter	Description
vrf *vrf-name*	Displays the RIP interface of specified VRF (optional).
[*interface-type interface-number*]	Displays the specified interface type and interface number (optional).

Defaults N/A

Command Mode Privileged EXEC mode/ Global configuration mode/ Routing process configuration mode

Usage Guide This command is used to display the information about RIP interfaces. If no RIP interface exists, no information is displayed.

Configuration Examples The following example displays the RIP interface information.

```
Ruijie# show ip rip interface
FastEthernet 0/1 is up, line protocol is up
Routing Protocol: RIP
Receive RIPv2 packets only
Send RIPv2 packets only
Recv RIP packet total: 0
Send RIP packet total: 3
Passive interface: Disabled
Split Horizon with Poisoned Reverse: Enabled
Triggered RIP Enabled:
Retransmit-timer: 5, Retransmit-count: 36
V2 Broadcast: Disabled
Multicast registe: Registed
Interface Summary Rip:
Not Configured
Authentication mode: Text
Authentication key-chain: ripk1
Authentication text-password: ruijie
Default-information: only, metric 5
IP interface address:
```

```
192.168.64.100/24, next update due in 14 seconds
2.2.1.1/24, next update due in 24 seconds
    neighbor 2.2.1.6, next update due in 3 seconds
    neighbor 2.2.1.77, next update due in 13 seconds
2.2.2.57/24, next update due in 16 seconds
```

If the BFD has been configured for RIP, the BFD information is also displayed.

```
Ruijie#show ip rip interface
Serial 0/1 is up, line protocol is up
  Routing Protocol: RIP
    Receive RIPv1 and RIPv2 packets
    Send RIPv1 packets only
    Receive RIP packet: Enabled
    Send RIP packet: Enabled
    Send RIP supernet routes: Enabled
    Recv RIP packet total: 0
    Send RIP packet total: 3
    Passive interface: Disabled
Split Horizon: Enabled
Triggered RIP Disabled
    BFD: Enabled
    V2 Broadcast: Disabled
    Multicast registe: Registed
    Interface Summary Rip:
      Not Configured
    IP interface address:
      2.2.2.111/24, next update due in 14 seconds
```

Related Commands

Command	Description
show ip rip	Displays the information of the currently running routing protocol process.

Platform Description N/A

1.38 show ip rip peer

Use this command to show the RIP peer information. RIP records a summary for the RIP routing information source learnt (source addresses of RIP route update packets) for the convenience of user monitoring. This routing information source is called RIP neighbor information.

show ip rip peer [*ip-address*] [**vrf** *vrf-name*]

Parameter Description

Parameter	Description

ip-address	(Optional) Displays the IP address of a specified RIP neighbor.
vrf *vrf-name*	(Optional) Displays the RIP interface of a specified VRF.

Defaults N/A

Command Mode Privileged EXEC mode/ Global configuration mode/ Routing process configuration mode

Usage Guide This command is used to display the RIP neighbor information. If no RIP neighbor exists, no information will be displayed.

Configuration Examples The following example displays the RIP neighbor information.

```
Ruijie# show ip rip peer
Peer 192.168.3.2:
  Local address: 192.168.3.1
  Input interface: GigabitEthernet 0/2
  Peer version: RIPv1
  Received bad packets: 3
  Received bad routes: 0
  BFD session state up
```

Related Commands

Command	Description
show ip rip	Displays the information of the routing protocol process that is running.

Platform Description N/A

1.39 timers basic

Use this command to adjust the RIP clock. Use the **no** form of this command to restore the default setting.

timers basic *update invalid flush*

no timers basic

Parameter Description

Parameter	Description
update	Indicates the route update time in seconds. The update keyword defines the period at which the device sends route update packets. Each time an update packet is received, the "Invalid" and "Flush" clocks are reset. By default, a route update packet is sent every 30 seconds.
invalid	Indicates the route invalid time in seconds, starting from the last valid

	update packet. The "invalid" defines the period when the route in the routing table becomes invalid due to no update. The invalid period of route shall be at least three times the route update period. If no update packet is received within the route invalid period, the related route becomes invalid and enters into the "invalid" state. If an update packet is received within the period, the clock resets. By default, the Invalid time is 180 seconds.
flush	Indicates the route flushing time in seconds, starting when a RIP route enters into the invalid status. When the flush time is due, the routes in the invalid status will be cleared out of the routing table. The default Flush time is 120 seconds.

Defaults By default, the update time is 30 seconds, the invalid time is 180 seconds, and the flushing time is 120 seconds.

Command Mode Routing process configuration mode

Usage Guide Adjusting the above clocks may speed up routing protocol convergence and fault recovery. Devices connected to the same network must have consistent RIP clock values. Adjustment of RIP clocks is not recommended unless otherwise specified.

To check the current RIP clock parameters, use the **show ip rip** command.

If you set the clock to a small value on low-speed links, some risks will be caused because numerous update packets may use up the bandwidth. In general, the clocks can be configured with smaller values on Ethernet or the lines of above 2 Mbit/s to reduce the convergence time of routes.

Configuration Examples The following example enables the RIP update packets that are sent every 10 seconds. If no update packet is received within 30 seconds, related routes become invalid and enter the invalid status. When another 90s elapses, they will be cleared.

```
Ruijie (config)# router rip
Ruijie (config-router)# timers basic 10 30 90
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.40 validate-update-source

Use this command to validate the source address of the received RIP route update packet. Use the

no form of the command to disable this function.

validate-update-source

no validate-update-source

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode Routing process configuration mode

Usage Guide You can validate the source address of the RIP route update packet. The validation aims to ensure that the RIP routing process receives only the route update packets from the same IP subnet neighbor.

Disabling split horizon on the interface causes the RIP routing process to enable update message source address validation, no matter whether it has been configured with the **validate-update-source** command in routing process configuration mode.

In addition, for the ip unnumbered interface, the RIP routing process does not implement update message source address validation, no matter whether it has been configured with the command **validate-update-source**.

Configuration Examples The following example disables verification of the source IP address of the update packet.

```
Ruijie (config)# router rip
Ruijie (config-router)# no validate-update-source
```

Related Commands

Command	Description
ip split-horizon	Enables split horizon.
ip unnumbered	Defines the IP unnumbered interface.
neighbor (RIP)	Defines the IP address of a RIP neighbor.

Platform Description N/A

1.41 version

Use this command to define the RIP version of a device. Use the **no** form of this command to restore the default setting.

version { **1 | 2** }

no version

Parameter

Parameter	Description

Description

1	Defines the RIP version 1.
2	Defines the RIP version 2.

Defaults The route update packets of RIPv1 and are received by default, but only the RIPv1 route update packets are sent.

Command Mode Routing process configuration mode

Usage Guide This command defines the RIP version running on the device. It is possible to redefine the messages of which RIP version are processed on every interface by using the **ip rip receive version** and **ip rip send version** commands.

Configuration Examples The following example configures the RIP version as version 2.

```
Ruijie (config)# router rip
Ruijie (config-router)# version 2
```

Related Commands

Command	Description
ip rip receive version	Defines the version of RIP packets received on the interface.
ip rip send version	Defines the version of RIP packets sent on the interface.
show ip rip	Displays RIP information.

Platform Description N/A

2 OSPFv2 Commands

2.1 area

Use this command to configure the specified OSPF area. Use the **no** form of this command to restore the default setting.

area *area-id*

no area *area-id*

Parameter Description

Parameter	Description
area-id	ID of the OSPF area. The value can be a decimal integer or an IP address.

Defaults No OSPF area is configured by default.

Command Mode Routing process configuration mode

Usage Guide Use the no form of this command to remove the specified OSPF area and its configuration, including the area-based **area authentication, area default-cost, area filter-list, and area nssa** commands.

- Do not remove the OSPF area configuration under the following conditions:
- Virtual links exist in the backbone area. The virtual links must be removed at first.
- The corresponding network area command exists in any area. All network segment commands added to an area must be removed at first.

Configuration Examples The following example removes the configuration of OSPF area 2.

```
Ruijie(config)# router ospf 2
Ruijie(config-router)# no area 2
```

Related Commands

Command	Description
network area	Defines the interface where OSPF runs and the belonging area of the interface.

Platform Description N/A

2.2 area authentication

Use this command to enable OSPF area authentication. Use the **no** form of this command to restore the default setting.

area *area-id* **authentication** [**message-digest**]

no area *area-id* **authentication**

Parameter Description

Parameter	Description
area-id	Specifies ID of the area enabled with OSPF. The value can be a decimal integer or an IP address.
message-digest	(Optional) Enables MD5 (message digest 5) authentication mode.

Defaults No authentication is enabled by default.

Command Mode Routing process configuration mode

Usage Guide The RGOS software supports three authentication types:

1) 0, no authentication. The authentication type in the OSPF packet is 0when this command is not executed to enable OSPF authentication. 2) 1, plain text authentication mode. When this command is configured, the message-digest option is not used.3) 2, MD5 authentication mode. When this command is configured, the message-digest option is used.

All devices in the same OSPF area must use the same authentication type. If authentication is enabled, the authentication password must be configured on an interface connecting neighbors. You can use the **ip ospf authentication-key** command to configure the plain text authentication password, and the **ip ospf message-digest-key** command to configure the MD5 authentication password in interface configuration mode.

Configuration Examples The following example uses MD5 authentication and the authentication password backbone in area 0 (backbone area) of the OSPF routing process.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# ip address 192.168.12.1 255.255.255.0
Ruijie(config-if-FastEthernet 0/1)# ip ospf message-digest-key 1 md5 backbone
Ruijie(config)# router ospf 1
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# area 0 authentication message-digest
```

Related Commands

Command	Description
ip ospf authentication-key	Defines the OSPF plain text authentication password.
ip ospf message-digest-key	Defines the OSPF MD5 authentication password.

area virtual-link	Defines a virtual link.

Platform Description N/A

2.3 area default-cost

Use this command to define the cost (OSPF metric) of the default aggregate route advertised to the stub area or not-so-stubby area (NSSA) in routing process configuration mode. Use the **no** form of this command to restore the default setting.

area *area-id* **default-cost** *cost*

no area *area-id* **default-cost**

Parameter Description

Parameter	Description
area-id	ID of the stub area or NSSA
Cost	Cost of the default aggregate route advertised to the stub area or NSSA. The range is from 0 to 16777215.

Defaults The default is 1.

Command Mode Routing process configuration mode

Usage Guide This command takes effect only on the Area Border Router (ABR) of the stub area or the ABR/Autonomous System Border Router (ASBR) of the NSSA.

The ABR can advertise a Link State Advertisement (LSA) indicating the default route in the stub area. The ABR/ASBR can advertise an LSA indicating the default route in the NSSA. You can use the **area default-cost** command to modify the LSA cost.

Configuration Examples The following example sets the cost of the default aggregate route to 50.

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# network 172.16.0.0 0.0.255.255 area 0
Ruijie(config-router)#network 192.168.12.0 0.0.0.255 area 1
Ruijie(config-router)# area 1 stub
Ruijie(config-router)# area 1 default-cost 50
```

Related Commands

Command	Description
area stub	Sets an OSPF area as a stub area.
area nssa	Sets an OSPF area as an NSSA.

Platform N/A

Description

2.4 area filter-list

Use this command to filter the inter-area routes on the ABR. Use the **no** form of this command to restore the default setting.

area *area-id* **filter-list** { **access** *acl-name*| **prefix** *prefix-name* } { **in** | **out** }

no area *area-id* **filter-list** { **access** *acl-name* | **prefix** *prefix-name* } { **in** | **out** }

Parameter Description

Parameter	Description
area-id	Area ID
acl-name	Name of an Access Control List (ACL)
prefix-name	Prefix-list name
in | **out**	Applies the ACL rule to the routes incoming/outgoing the area.

Defaults No filtering is configured by default.

Command Mode Routing process configuration mode

Usage Guide This command can be configured only on an ABR.

You can use this command when it is required to filter the inter-area routes on the ABR.

Configuration Examples The following example sets area 1 to learn only the inter-area routes of 172.22.0.0/8.

```
Ruijie # configure terminal
Ruijie(config)# access-list 1 permit 172.22.0.0/8
Ruijie(config)# router ospf 100
Ruijie(config-router)# area 1filter-list access1in
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.5 area nssa

Use this command to set an OSPF area as an NSSA in routing process configuration mode. Use the **no** form of this command to delete the NSSA or the NSSA configuration.

area *area-id* **nssa** [**no-redistribution**] [**default-information-originate** [**metric** *value*] [**metric-type** *type*]] [**no-summary**] [**translator** [**stability-interval** *seconds* | **always**]]

no area *area-id* **nssa** [**no-redistribution**] [**default-information-originate** [**metric** *value*] [**metric-type** *type*]] [**no-summary**] [**translator** [**stability-interval** | **always**]]

Parameter Description

Parameter	Description
area-id	NSSAID
no-redistribution	Imports the routing information to a common area other than the NSSA for the NSSA ABR.
default-information originate	Generates and imports the default Type 7 LSA to the NSSA. This option takes effect only on the NSSA ABR or ASBR.
metric *value*	Sets the metric of the generated default LSA. The range is from 0 to 16777214. The default value is 1.
metric-type *type*	Sets the type of the generated LSA to N-1 or N-2. The default value is N-2.
no-summary	Prevents the NSSA ABR from sending summary LSAs (Type-3 LSA).
Translator	Configures the translator for the NSSA ABR.
stability-interval *seconds*	Configures the stability interval in seconds for the NSSA ABR that functions as a translator to change to a non-translator. The range is from 0 to 2147483647. The default value is 40.
Always	Configures that an NSSA ABR always functions as a translator. The NSSA ABR is the backup translator by default.

Defaults No NSSA is defined by default.

Command Mode Routing process configuration mode

Usage Guide The default-information-originate parameter is used to generate the default Type-7 LSA. However, on the NSSA ABR, the default Type-7 LSA will always be generated; On the ASBR (which is not an ABR at the same time), the default Type-7 LSA is generated only when the default route exists in the routing table.

The no-redistribution parameter prevents the OSPF from advertising the external routes imported with the redistribute command to the NSSA on the ASBR. This option is generally used when the NSSA device is both an ASBR and an ABR.

To reduce the number of LSAs sent to the NSSA, you can configure the no-summary parameter on the ABR to prevent it from advertising summary LSAs (Type-3 LSAs) to the NSSA. In addition, you can use the area default-cost command on the NSSA ABR to configure the cost of the default route advertised to the NSSA. By default, this cost is 1.

If an NSSA has multiple ABRs, the ABR with the greatest ID is selected as the Type-7 or Type-5 translator. To configure that an NSSA ABR always functions as a translator, you can use the translator always parameter. If the translator role of an ABR is taken away by another ABR, the ABR still possesses the conversion capability within stability-interval. If the ABR fails to take back its translator role when stability-interval expires, the LSA that changes from Type-7 to Type-5 will be

removed from the autonomous domain.
To avoid route loops, Type-5 LSAs generated from Type-7 convergence will be eliminated immediately after the current device stopped serving as a translator, with no need to wait until the stability-interval expires.
In a same NSSA, you are recommended to configure the **translator always** parameter on only one ABR.

Configuration Examples The following example sets area 1 as an NSSA on all routers of the area.

```
Ruijie(config)#router ospf1
Ruijie(config-router)#network 172.16.0.0 0.0.255.255 area0
Ruijie (config-router)#network 192.168.12.0 0.0.0.255 area 1
Ruijie(config-router)# area1nssa
```

Related Commands

Command	Description
area default-cost	Defines the cost (OSPF metric) of the default aggregate route advertised to the NSSA.

Platform Description N/A

2.6 area range

Use this command to configure inter-area route aggregation for OSPF. Use the **no** form of this command to delete route aggregation. Use the **no** form with the cost parameter to restore the default metric of the aggregate route, but not delete route aggregation.
area *area-id* **range** *ip-address net-mask* [**advertise** | **not-advertise**] [c**ost** *cost*]
no area *area-id* **range** *ip-address net-mask* [**cost**]

Parameter Description

Parameter	Description
area-id	ID of the area where the aggregate route is injected into. The value can be a decimal integer or an IP address.
ip address net-mask	Network segment whose routes are to be aggregated
advertise | not-advertise	Whether to advertise the aggregate route
cost *cost*	Sets the priority of the interface. The range is from 0 to 16777215.

Defaults No inter-area route aggregation is configured by default.
The configured aggregation range is advertised by default.
The default metric of the aggregate route depends on whether the device is compatible with RFC1583. If yes, the default metric is the smallest cost of the aggregate route. If no, the default metric is the largest cost of the aggregate route.

Command Mode Routing process configuration mode

Usage Guide This command takes effect only on the ABR to aggregate multiple routes of an area into a route and advertise it to other areas. Route combination occurs only on the border of an area. The devices inside an area see the specific routing information, but the devices outside the area see only one aggregate route. The advertise and not-advertise options can set whether to advertise the aggregate route for filtering and masking. The aggregate route is advertised by default.
You can use the cost option to set the metric of the aggregate route.
You can define route aggregate in multiple areas to simplify the routes in the whole OSPF routing area. This improves the network forwarding performance, especially in large networks.
The area range of route aggregation is determined according to the longest match when multiple aggregate routes with direct inclusion relationships are configured.

Configuration Examples The following example aggregate the routes of area 1 into a route 172.16.16.0/20.

```
Ruijie(config)#router ospf 1
Ruijie(config-router)#network 172.16.0.0 0.0.15.255area0
Ruijie((config-router)#network 172.16.17.0 0.0.15.255area1
Ruijie(config-router)#area1range 172.16.16.0 255.255.240.0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.7 area stub

Use this command to set an OSPF area as a stub area or full stub area. Use the **no** form of this command to restore the default setting.
area *area-id* **stub** [**no-summary**]
no area *area-id* **stub** [**no-summary**]

Parameter Description

Parameter	Description
area-id	Stub area ID
no-summary	(Optional) Prevents the ABR from advertising the network summary link to the stub area. Here the stub area is called the full stub area. Only the ABR needs this parameter.

Defaults No stub area is defined by default.

Command Routing process configuration mode

Mode

Usage Guide All devices in the OSPF stub area must be configured with the area stub command. The ABR only sends three types of link state advertisement (LSA) to the stub area: 1) type 1, device LSA; 2) type 2, network LSA; 3) type 3, network summary LSA. For the routing table, the devices in the stub area can learn only the routes inside the OSPF routing domain, including the internal default routes generated by the ABR.

To configure a full stub area, use the area stub command with the no-summary keyword on the ABR. The devices in the full stub area can learn only the routes in the local area and the internal default routes generated by the ABR.

Two commands can configure an OSPF area as a stub area: the area stub and area default-cost commands. All devices connected to the stub area must be configured with the area stub command, but the area default-cost command can be executed only on the ABR. The area default-cost command defines the initial cost (metric) of the internal default route.

Configuration Examples The following example sets area 1 as the stub area on all devices in area 1.

```
Ruijie(config)# router ospf1
Ruijie(config-router)# network172.16.0.0 0.0.255.255 area 0
Ruijie (config-router)# network 192.168.12.0  0.0.0.255 area 1
Ruijie(config-router)# area 1 stub
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.8 area virtual-link

Use this command to define the OSPF virtual link in routing process configuration mode. Use the **no** form of this command to restore the default setting.

area *area-id* **virtual-link** *router-id* [**authentication** [**message-digest** | **null**]] [**dead-interval** { *seconds* | **minimal hello-multiplier** *multiplier* }] [**hello-interval** *seconds]* [**retransmit-interval** *seconds]* [**transmit-delay** *seconds*] [[**authentication-key** [**0|7**] *key*] | [**message-digest-key** *key-id* **md5** [**0|7**] *key*]]

no area *area-id* **virtual-link** *router-id* [**authentication**] [**dead-interval**] [**hello-interval**] [**retransmit-interval**] [**transmit-delay**] [[**authentication-key**] | [**message-digest-key** *key-id]]*

Parameter Description

Parameter	Description
area-id	ID of the OSPF transition area. The value can be a decimal integer or an IP address.
router-id	ID of the router neighboring to the virtual link. It can be viewed with

	the show ip ospf command.
dead-interval *seconds*	(Optional) Defines the time to declare neighbor loss in seconds. The range is 0 to 2147483647.This value must be consistent with that of the neighbor.
minimal	Enables the Fast Hello function and sets the death clock to 1 second.
hello-multiplier	Multiplies dead-interval with hello-interval in the Fast-Hello function.
multiplier	Specifies the number of Hello packets that are sent every second in the Fast Hello function. The range is from 3 to 20.
hello-interval *seconds*	(Optional)Defines the interval at which the HELLO packet is sent by the OSPF to the virtual link in seconds. The range is from1 to 65535.This value must be consistent with that of the neighbor.
retransmit-interval *seconds*	(Optional) OSPF LSA retransmission interval in seconds. The range is from 0 to 65535. The parameter setting must consider the round-trip time of packets on the link.
transmit-delay *seconds*	(Optional) OSPF LSA transmission delay in seconds. The range is from 0 to 65535. This value adds the LSA keep alive period. When the LSA keep alive period reaches a threshold, the LSA will be refreshed.
authentication-key [0|7]*key*	(Optional) Defines the OSPF plain text authentication key. The plain text authentication key between neighbors must be the same. The service password-encryption command enables the key to be displayed in encrypted manner. 0 indicates that the key is displayed in plain text. 7 indicates that the key is displayed in cipher text.
message-digest-key *key-id***md5 [0|7]***key*	(Optional) Defines the OSPF MD5 authentication key and key ID. The MD5 authentication key ID and key between neighbors must be the same. The service password-encryption command enables the key to be displayed in encrypted manner. 0 indicates that the key is displayed in plain text. 7 indicates that the key is displayed in cipher text.
Authentication	Sets the authentication type to plain text.
message-digest	Sets the authentication type to MD5.
Null	Sets the authentication type to no authentication.

Defaults The following are the default values:
dead-interval: 40seconds
hello-interval: 10seconds
retransmit-interval: 5seconds
transmit-delay: 1second
authentication: null
The Fast Hello function is disabled by default.
The other parameters do not have default values.

Command Routing process configuration mode

Mode

Usage Guide A virtual link can connect an area to the backbone area, or another non-backbone area. In the OSPF routing domain, all areas must connect to the backbone area. If an area disconnects from the backbone area, a virtual link to the backbone area is required. Otherwise, the network communication will become abnormal. The virtual link is created between two ABRs. The area that belongs to both ABRs is called the transition area, which can never be a stub area or NSSA.

The router-id parameter indicates the ID of OSPF neighbor router and can be displayed with the show ip ospf neighbor command. You can configure the loopback address as the router ID.

The area virtual-link command defines only the authentication key for a virtual link. You can use the **area authentication** command to enable the OSPF packet authentication in areas connected over the virtual link in routing process configuration mode.

OSPF supports the Fast Hello function.

If the Fast Hello function is enabled, the OSPF can discover neighbors and detects invalid neighbors quickly. You can enable the OSPF Fast Hello function by specifying the keywords minimal and hello-multiplier, and the multiplier parameter. You can set the death clock to 1 second in minimal and hello-multiplier to a value equal to or greater than 2. In this case, the Hello packet sending interval is less than 1 second.

The hello-interval field of a Hello packet received by a virtual link is omitted if the Fast Hello function is enabled on the virtual link and the hello-interval field is set to 0 for Hello packets advertised from the virtual link.

No matter the Fast Hello function is enabled or not, the values of dead-interval must be consistent on both ends of a virtual link. The values of hello-multiplier on both ends can be different if at least one Hello packet can be received within dead-interval. You can use the show ip ospf virtual-links command to monitor dead-interval and hello-interval configured for a virtual link.

For the Fast Hello function, you can only configure either the **dead-interval minimal hello-multiplier** parameter or the **hello-interval** parameter.

Configuration Examples The following example sets area 1 as the transition area to establish virtual link with neighbor *2.2.2.2.*

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# network 172.16.0.0 0.0.15.255 area0
Ruijie(config-router)# network 172.16.17.0 0.0.15.255 area1
Ruijie(config-router)#area1 virtual-link2.2.2.2
```

The following example sets area 1 as the transition area to establish a virtual link with neighbor *1.1.1.1*. This virtual link connects area 10 and the backbone area, and works with the OSPF packet authentication inMD5 mode.

```
Ruijie(config)# routerospf1
Ruijie(config-router)# network172.16.17.0 0.0.15.255area1
Ruijie(config-router)# network172.16.252.0 0.0.0.255 area10
Ruijie(config-router)# area 0 authentication message-digest
Ruijie(config-router)# area1virtual-link 1.1.1.1message-digest-key1md5hello
```

The following example sets area 1 as the transition area to establish a virtual link with neighbor 1.1.1.1, enables the Fast Hello function on this virtual link, and sets the multiplier to 3.

```
Ruijie(config)# routerospf1
```

```
Ruijie(config-router)# network172.16.17.0 0.0.15.255 area1
Ruijie(config-router)# network 172.16.252.0 0.0.0.255 area10
Ruijie(config-router)# area1 virtual-link1.1.1.1dead-interval minimal
hello-multiplier 3
```

Related Commands

Command	Description
show ip ospf	Displays the OSPF process information, including the router ID.
show ip ospf virtual-links	Monitors information about a virtual link.

Platform Description N/A

2.9 asbr enable

Use this command to configure the device as ASBR. Use the **no** form of this command to restore the default settings.

asbr enable

no asbr enable

Parameter Description

Parameter	Description
N/A	

Defaults The device is not ASBR by default

Command Mode Routing process configuration mode

Usage Guide If the **redistribute** or **default-information** commands are run, OSPF routing device will turn into ASBR automatically. If the above commands are not configures but you want the device to become ASBR, you can configure **asbr enable**. If **asbr enable** is deleted yet **redistribute** or **default-information** is configured, the device is still ASBR.

Configuration Examples The following example configures the device as ASBR.

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# asbr enable
```

Related Commands

Command	Description

Platform Description N/A

2.10 auto-cost

Use this command to enable the auto-cost function and set the reference bandwidth according to the reference bandwidth. Use the **no** form of this command to restore the default setting.

auto-cost reference-bandwidth *ref-bw*

no auto-cost reference-bandwidth

Parameter Description

Parameter	Description
ref-bw	Reference bandwidth, in the range from1 to 4294967 Mbps.

Defaults The default is 100Mbps.

Command Mode Routing process configuration mode

Usage Guide This command sets the reference bandwidth for automatically generating the interface cost. Without the optional parameter, the command enables the auto-cost function with the default reference bandwidth. With the optional parameter, the command enables the auto-cost function with a specified reference bandwidth. Note that the **default auto-cost** command enables the auto-cost function with the default configuration, while and the **no auto-cost** command disables the function.

The cost set with the **ip ospf cost** command will replace the auto-cost.

Configuration Examples The following example configures the reference bandwidth as 10 Mbps.

```
Ruijie(config)# routerospf1
Ruijie(config-router)# network172.16.10.0 0.0.0.255 area0
Ruijie(config-router)# auto-costreference-bandwidth10
```

Related Commands

Command	Description
show ip ospf	Displays the OSPF global configuration information
ip ospf cost	Sets the cost value of the OSPF interface.
Bandwidth	Sets the interface bandwidth. This setting does not affect data transmission rate.

Platform Description N/A

2.11 bdf all-interfaces

Use this command to enable Bidirectional Forwarding Detection (BFD) on all OSPF interfaces. Use the **no** form of this command to restore the default setting.

bdf all-interfaces
no bdf all-interfaces

Parameter Description

Parameter	Description
N/A	N/A

Defaults BDF is disabled by default.

Command Mode Routing process configuration mode

Usage Guide OSPF dynamically discovers the neighbors through Hello packets. With the BFD function enabled, one BFD session will be established for the neighbors that match the FULL rules and the status of the neighbors will be detected through the BFD mechanism. Once the BFD neighbor fails, the OSPF will converge with the network immediately.
You can also use the **ip ospf bfd** [**disable**] command in interface configuration mode to enable or disable the BFD function on the specified interface, which takes precedence over the **bfd all-interfaces** command in routing process configuration mode.

Configuration Examples N/A

Related Commands

Command	Description
router ospf	Creates the OSPF routing process and enters routing process configuration mode.
ip ospf bfd]	Enables the specified interface running OSPF or disabling BFD for link detection.

Platform Description N/A

2.12 capability opaque

Use this command to enable Opaque LSA. Use the **no** form of this command to disable this function.
capability opaque
no capability opaque

Parameter Description

Parameter	Description
N/A	N/A

Defaults Opaque LSA is enabled by default.

Command Mode Routing process configuration mode.

Usage Guide N/A

Configuration Examples The following example disables Opaque LSA capability.

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# no capability opaque
```

Related Commands

Command	Description
show ip ospf	Displays the global configuration of OSPF.

Platform Description N/A

2.13 clear ip ospf process

Use this command to clear and restart the OSPF instance.

clear ip ospf *(process-id)* **process**

Parameter Description

Parameter	Description
process-id	OSPF instance ID. When the ID is specified, the command clears data related to the specified instance and restarts the OSPF instance. When no ID is specified, the command clears data related to all running OSPF instances and restarts all the running OSPF instances.

Defaults The rule recommended in the RFC 1583 is used by default.

Command Mode Privileged EXEC mode

Usage Guide Resetting the entire OSPF process causes that all neighbors are re-established and OSPF is greatly affected. Therefore, you are prompted to confirm the execution for deliberation.

Configuration Examples The following example clears data of OSPF instance 1 and restarts OSPF instance 1.

```
Ruijie#clearipospf1process
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.14 compatible rfc1583

Use this command to determine the RFC 1583 or RFC 2328 rule for selecting the optimal route among route table several routes to the same destination out of the Autonomous System (AS).
compatible rfc1583
no compatible rfc1583

Parameter Description

Parameter	Description
N/A	N/A

Defaults The RFC 1583 rule is used by default.

Command Mode Routing process configuration mode

Usage Guide N/A

Configuration Examples The following example determines the best route with the RFC 2328 rule.

```
Ruijie(config)# routerospf1
Ruijie(config-router)# nocommpatiblerfc1583
```

Related Commands

Command	Description
show ip ospf	Displays the OSPF global configuration information

Platform Description N/A

2.15 default-information originate

Use this command to generate a default route to be injected into the OSPF routing domain in routing process configuration mode. Use the **no** form of this command to restore the default setting.
default-information originate [**always**] [**metric** *metric*] [**metric-type** *type*] [**route-map** *map-name*]
no default-information originate [**always**] [**metric**] [**metric-type**] [**route-map** *map-name*]

Parameter Description

Parameter	Description
Always	(Optional) Generates the default route unconditionally, no matter whether the default route exists locally or not.
metric *metric*	(Optional) Initial metric of the default route in the range from0 to 16777214
metric-type *type*	(Optional) Type of the default route. There are two type of OSPF external routes: type 1, different metrics on different devices; type 2, same metric on different devices. An external route of type 1 is more trustworthy than that of type 2.
route-map *map-name*	Associated route map name. No route map is associated by default.

Defaults No default route is generated by default.
The default value of metric is 1.
The default value of metric-type is 2.

Command Mode Routing process configuration mode

Usage Guide When the **redistribute** or **default-information** command is executed, the OSPF-enabled device automatically turns into the ASBR. The ASBR cannot generate the default route automatically or advertise it to all the devices in the OSPF routing domain. The ASBR can generate the default route with the **default-information originate** command in routing process configuration mode.
If the always parameter is used, the OSPF routing process advertises an external default route to neighbors, no matter the default route exists or not. However, the local device does not display the default route. To make sure whether the default route is generated, use the **show ip ospf database** command to display the OSPF link state database. The external link identified with 0.0.0.0 indicates the default route. You can use the show ip route command on the OSPF neighbor to display the default route.
The metric of the external default route can be defined only with the **default-information originate** command.
There are two types of OSPF external routes: type 1 external routes have changeable routing metrics, while type 2 external routes have constant routing metrics. For two parallel routes with the same route metric to the same destination network, the type 1 route takes precedence over the type 2 route. As a result, the **show ip route** command displays only the type 1 route.
This command generates a default route of Type-5 LSA, which will not be flooded to the NSSA area. To generate a default route in the NSSA area, use the **area nssa default-information-originate** command.
The routers in the stub area cannot generate external default routes.

The range of set metric is 0 to 16777214 for the associated route map. If the value exceeds the range, introducing a route fails.

Configuration The following example configures that OSPF generates an external default route and injects it to the

Examples OSPF routing domain. The default route is of type 1 and the metric 50.

```
Ruijie(config)#routerospf 1
Ruijie(config-router)#network172.16.24.0 0.0.0.255 area 0
Ruijie(config-router)#default-information originate
alwaysmetric50metric-type1
```

Related Commands

Command	Description
show ip ospf database	Displays OSPF link state database.
show ip route	Displays the IP route table.
Redistribute	Redistributes routes of other routing processes.

Platform Description N/A

2.16 default-metric

Use this command to set the **default metric** of OSPF redistribution route. Use the **no** form of this command to restore the default setting.

default-metric *metric*

no default-metric

Parameter Description

Parameter	Description
Metric	Default metric of the OSPF redistribution route in the range from1 to 16777214

Defaults The default metric is not configured by default.

Command Mode Routing process configuration mode

Usage Guide The **default-metric** command must work with the **redistribute** command in routing process configuration mode to modify the initial metric of all redistributed routes.

The configuration result of the **default-metric** command does not take effect for the external routes injected into the OSPF routing domain with the **default-information originate** command.

Configuration Examples The following example configures the default metric of the OSPF redistribution route as 50.

```
Switch(config)# router rip
Ruijie(config-router)# network192.168.12.0
Switch(config-router)# version 2
Ruijie(config-router)# exit
Ruijie(config)# routerospf1
Ruijie(config-router)# network172.16.10.0 0.0.0.255area0
```

```
Switch(config-router)# default-metric 50
Ruijie(config-router)# redistribute rip subnets
```

Related Commands

Command	Description
Redistribute	Redistributes the routes of other routing processes.
show ip ospf	Displays the OSPF global configuration information.

Platform Description N/A

2.17 discard-route

Use this command to enable adding the discard-route into the core route table. Use the **no** form of this command to disable this function.

discard-route { **internal | external** }

no discard-route { **internal** | **external** }

Parameter Description

Parameter	Description
Internal	Enables adding the discard-route generated with the area range command
External	Enables adding the discard-route generated with the summary-address command.

Defaults Adding the discard-route is enabled by default.

Command Mode Routing process configuration mode

Usage Guide After route aggregation, the range may exceed the actual network range of the route table, and sending the data to the nonexistent network may cause loops or increase router loads. To prevent this situation, the discard-route is added to the route table on the ABR or the ASBR. The discard-route is generated automatically and will not be transmitted.

Configuration Examples The following example disables adding the discard routes generated with the area range command.

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# no discard-route internal
```

Related Commands

Command	Description
area range	Configures the route aggregation between

	OSPF areas.
summary-address	Configures the route aggregation out of the OSPF routing domain.

Platform Description N/A

2.18 distance ospf

Use this command to set the Administration Distance (AD) of different types of OSPF routes. Use the **no** form of this command to restore the default setting.

distance { *distance* [**route-map** *map-name*] | **ospf** { [**intra-area** *distance* [**route-map** *map-name*]] [**inter-area** *distance* [**route-map** *map-name*]] [**external** *distance* [**route-map** *map-name*]] } }

no distance [**ospf**]

Parameter Description

Parameter	Description
Distance	Sets the route AD in the range from1 to 255.
intra-area *distance*	Sets the AD of the intra-area route in the range from1 to 255.
inter-area *distance*	Sets the AD of the inter-area route in the range from1 to 255.
External *distance*	Sets the AD of the external route in the range from1 to 255.
route-map *map-name*	Name of associated route-map. By default, no route-map is associated.

Defaults The default value is 110.
The default intra-area distance is 110.
The default inter-area distance is 110.
The default external distance is 110.

Command Mode Routing process configuration mode

Usage Guide This command is used to specify different ADs for different types of OSPF routes. If the command set distance is configured for route-map, then the AD of matched route is configured by set distance and of unmatched route is configured by distance.

Configuration Examples The following example sets the OSPF external route AD to 160.

```
Ruijie(config)# routerospf1
Ruijie(config-router)# distance ospf external 160
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.19 distribute-list in

Use this command to configure LSA filtering. Use the **no** form of this command to restore the default setting.

distribute-list *{ [access-list-number* | *name]* | **prefix** *prefix-list-name [* **gateway** *prefix-list-name]* | **route-map** *route-map-name }* **in** *[interface-type interface-number]*

no distribute-list *{ [access-list-number* | *name]* | **prefix** *prefix-list-name [* **gateway** *prefix-list-name]* | route-map *route-map-name }* **in** *[interface-type interface-number]*

Parameter Description

Parameter	Description
access-list-number | **name**	Uses the ACL filtering rule.
gateway *prefix-list-name*	Uses the gateway filtering rule.
prefix *prefix-list-name*	Uses the prefix-list filtering rule.
route-map *route-map-name*	Uses the route-map filtering rule.
interface-type interface-number	Configures the LSA route filtering on the interface.

Defaults No filtering is configured by default.

Command Mode Routing process configuration mode

Usage Guide This configuration filters the received LSAs, and only those matching the filtering conditions are involved in the Shortest Path First (SPF) calculation to generate the corresponding routes. It does not affect the link status database or the route table of the neighbors. It only affects the routing entries calculated by local OSPF. This function is used to control routes that enter the ABR or ASBR.

The following route-map rules will be supported if the route-map parameter is configured:

match interface
match ip address
match ip address prefix-list
match ip next-hop
match ip next-hop prefix-list
match metric
match route-type
match tag

Configuration Examples The following example configures LSA filtering.

```
Ruijie(config)# access-list3permit172.16.0.00.0.127.255
Ruijie(config)# router ospf 25
```

```
Ruijie(config-router)# redistribute rip metric100
Ruijie(config-router)# distribute-list 3 in ethernet 0/1
```

Related Commands

Command	Description
distribute-list out	Filters redistribution routes.

Platform Description N/A

2.20 distribute-list out

Use this command to configure filtering redistribution routes. The function is similar to that of the **redistribute** command. Use the **no** form of this command to restore the default setting.

distribute-list *{ [access-list-number* | *name]* | **prefix** *prefix-list-name }* **out** [**bgp** | **connected** | **isis** *[area-tag]* | **ospf** *process-id* | **rip** | **static| arp-host**]

no distribute-list *{ [access-list-number* | *name]* | **prefix** *prefix-list-name }* **out** [**bgp** | **connected** **|isis** *[area-tag]* | **ospf** *process-id* | **rip** | **static| arp-host**]

Parameter Description

Parameter	Description
access-list-number | name	Uses the ACL filtering rule.
prefix prefix-list-name	Uses the prefix-list filtering rule.
bgp | connected | isis [area-tag] **| ospf** process-id| **rip | static**	Source of the routes to be filtered
arp-host	Indicates the host route.

Defaults No filtering is configured by default.

Command Mode Routing process configuration mode

Usage Guide Similar to the redistribute route-map command, the distribute-list out command filters the routes that other protocols redistribute to the OSPF. However, the distribute-list out command does not redistribute routes by itself. It works with the redistribute command in most cases. The ACL filtering rule and the prefix-list filtering rule cannot coexist in the configuration, that is, the two rules cannot be configured at the same time for routes from the same source.

Configuration Examples The following example filters the redistributed static routes.

```
Ruijie(config)# routerospf1
Ruijie(config)# redistribute static subnets
Ruijie(config-router)# distribute-list 22 outstatic
Ruijie(config-router)# distribute-list prefix jjj out static
```

```
% Access-list filter exists, please de-config first
```

Related Commands

Command	Description
distribute-list in	Configures LSA filtering.
Redistribute	Redistributes routes of other routing processes.

Platform Description N/A

2.21 enable mib-binding

Use this command to bind the Management Information Base (MIB) with the specified OSPFv2 process. Use the **no** form of this command to restore the default setting.

enable mib-binding

no enable mib-binding

Parameter Description

Parameter	Description
N/A	N/A

Defaults The MIB is bound with the OSPFv2 process with the smallest ID by default.

Command Mode Routing process configuration mode

Usage Guide OSPFv2 MIB has no OSPFv2 process information, so the user operates a sole OSPFv2 process by SNMP. By default, OSPFv2 MIB is bound with the OSPFv2 process with the smallest ID. User operations take effect for this process.

To operate the specified OSPF process over Simple Network Management Protocol(SNMP), use this command to bind the MIB to SNMP.

Configuration Examples The following example operates OSPFv2 process 100 over SNMP:

```
Ruijie(config)# routerospf100
Ruijie(config-router)# enable mib-binding
```

Related Commands

Command	Description
show ip ospf	Displays the OSPF global configuration information.
enable traps	Configures the OSPF TRAP function.

Platform Description N/A

2.22 enable traps

The OSPFv2 process supports 16 kinds of TRAP packets, which are classified into four categories. Use this command to enable sending the specified TRAP messages. Use the **no** form of this command to restore the default setting.

enable traps [**error** [**IfAuthFailure** | **IfConfigError** | **IfRxBadPacket** | **VirtIfAuthFailure** | **VirtIfConfigError** | **VirtIfRxBadPacket**] | **lsa** [**LsdbApproachOverflow** | **LsdbOverflow** | **MaxAgeLsa** | **OriginateLsa**] | **retransmit** [**IfTxRetransmit** | **VirtIfTxRetransmit**] | **state-change** [**IfStateChange** | **NbrRestartHelperStatusChange** | **NbrStateChange** | **NssaTranslatorStatusChange** | **RestartStatusChange** | **VirtIfStateChange** | **VirtNbrRestartHelperStatusChange | VirtNbrStateChange**]]

no enable traps [**error** [**IfAuthFailure** | **IfConfigError** | **IfRxBadPacket** | **VirtIfAuthFailure** | **VirtIfConfigError** | **VirtIfRxBadPacket**] | **lsa** [**LsdbApproachOverflow** | **LsdbOverflow** | **MaxAgeLsa** | **OriginateLsa**] | **retransmit** [**IfTxRetransmit** | **VirtIfTxRetransmit**] | **state-change** [**IfStateChange** | **NbrRestartHelperStatusChange** | **NbrStateChange** | **NssaTranslatorStatusChange** | **RestartStatusChange** | **VirtIfStateChange** | **VirtNbrRestartHelperStatusChange | VirtNbrStateChange**]]

Parameter Description

<table>
<tr><th>Parameter</th><th>Description</th></tr>
<tr><td>Error</td><td>Configures all traps switches related to errors. Use this parameter to set the following specified error traps switches.
<table>
<tr><td>Ifauthfailure</td><td>Interface authentication error</td></tr>
<tr><td>Ifconfigerror</td><td>Interface parameter configuration error</td></tr>
<tr><td>Ifrxbadpacket</td><td>Error packets received on the interface</td></tr>
<tr><td>Virtifauthfailure</td><td>Authentication error on the virtual interface</td></tr>
<tr><td>Virtifconfigerror</td><td>Parameter configuration error on the virtual interface</td></tr>
<tr><td>Virtifrxbadpacket</td><td>Error packets received on the virtual interface</td></tr>
</table></td></tr>
<tr><td>lsa</td><td>Configures all traps switches related to the LSA. Use this parameter to set the following specified LSA traps switches.
<table>
<tr><td>Lsdbapproachoverflow</td><td>External LSA count has reached the 90% of the upper limit.</td></tr>
<tr><td>Lsdboverflow</td><td>External LSA count has reached the upper limit.</td></tr>
<tr><td>Maxagelsa</td><td>LSA reaching the aging time</td></tr>
<tr><td>Originatelsa</td><td>Generates new LSA</td></tr>
</table></td></tr>
<tr><td>Retransmit</td><td>Configures all traps switches related to the retransmission. Use this parameter to set the following specified retransmit traps switches.
<table>
<tr><td>Iftxretransmit</td><td>Packet retransmission on the interface</td></tr>
<tr><td>Virtiftxretransmit</td><td>Packet retransmission on the virtual interface</td></tr>
</table></td></tr>
<tr><td>state-change</td><td>Configures all traps switches related to the state change. Use this</td></tr>
</table>

parameter to set the following specified state-change switches.

Ifstatechange	Interface state change
NbrRestartHelper StatusChange	State change during the neighbor GR process
Nbrstatechange	Neighbor state change
NssaTranslatorStatusChange	State change of the NSSA translator
RestartStatusChange	State change of the GR Restarter on the device
Virtifstatechange	State change on the virtual interface
VirtNbrRestartHelper StatusChange	Status change of the virtual neighbor GR process
Virtnbrstatechange	State change on the virtual neighbor

Defaults All TRAP switches are disabled by default.

Command Mode Routing process configuration mode

Usage Guide The **snmp-server enable traps ospf** command must be configured before you configure this command, for it is limited by the **snmp-server** command.
This command is not limited by the binding of process and MIB, allowing to enable the TRAP switch for different processes simultaneously.

Configuration Examples The following example enables all TRAP switches of OSPFv2 process 100.

```
Ruijie(config)# routerospf100
Ruijie(config-router)# enable traps
```

Related Commands

Command	Description
show ip ospf	Displays the OSPF global configuration information.
enable mib-binding	Binds the OSPFv2 process with MIB.
snmp-server enable traps ospf	Enables the OSPF TRAP notification function.

Platform Description N/A

2.23 fast-reroute

Use this command to enable the OSPF FRR (Fast Reroute) function for the device. Use the **no** form of this command to restore the default setting.

fast-reroute { **lfa [downstream-paths**] | **route-map** *route-map-name* }
no fast-reroute { **lfa [downstream-paths**] | **route-map**]}

Parameter Description

Parameter	Description
Lfa	Enables the LFA (loop-free alternate) path computation.
downstream-paths	Enables the downstream path computation.
route-map *route-map-name*	Specifies the backup path through the route map.

Defaults The FRR function is disabled by default.

Command Mode Routing process configuration mode

Usage Guide Configuring the **lfa** parameter will enable loop-free backup path computation. In this case, the path protection mode for an interface can be specified via the interface mode command.
Configuring the **downstream-paths** parameter will enable downstream path computation.
Configuring the **route-map** parameter can specify backup paths for successfully matched routes via a route map.
It is recommended to use the BFD function with OSPF FRR. In this manner, the device can detect link faults more rapidly to reduce forwarding interruption time. For interface up/down scenarios, to reduce forwarding interruption time of OSPF FRR, you can configure **carrier-delay** *0* for fastest switchover.
Note: OSPF FRR has the following restrictions:
Each route can only generate one backup next hop.
The backup next hop cannot be generated for ECMP.

Configuration Examples The following example enables FRR for OSPF instance 1 and associates route map *fast reroute*.

```
Ruijie(config)# route-map fast-reroute
Ruijie(config-route-map)# match ip address 1
Ruijie(config-route-map)# set fast-reroute backup-nexthop GigabitEthernet 0/1
192.168.1.2
Ruijie(config)# router ospf 1
Ruijie(config-router)# fast-reroute route-map fast-reroute
```

Related Commands

Command	Description
graceful-restart helper	Enables the OSPF graceful-restart helper.

Platform Description N/A

2.24 graceful-restart

Use this command to enable the graceful restart (GR) of OSPF on the device. Use the

graceful-restart grace-period command to configure the grace period parameter and enable the OSPF GR function. Use the **no** form of this command to disable this function.

graceful-restart [**graceful-period** *grace-period*]

no graceful-restart [*graceful-period*]

Parameter Description

Parameter	Description
grace-period	(optional)Explicitly configures grace-period.
grace-period	User-set GR interval in the range from1 to 1800 seconds. It is the longest time between the OSPF invalidation and the OSPF graceful restart. The default value is 120 seconds.

Defaults This function is enabled by default.

Command Mode Routing process configuration mode

Usage Guide GR is configured based on the OSPF instance. Different instances could be configured with different parameters according to the actual situation.

The graceful restart interval is the longest time between the OSPF restart and the graceful restart. In this period, you can perform link status reconstruction to restore the OSPF status to the original. With the interval times out, the OSPF will exit GR and perform common OSPF operations.

The GR interval is 120 seconds set with the graceful-restart command, and the graceful-restart grace-period command allows you to change the interval explicitly.

GR is unavailable when the Fast Hello function is enabled.

Configuration Examples The following example enables GR for the OSPF instance 1 and sets the restart interval for GR.

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# graceful-restart
Ruijie(config-router)# graceful-restart grace-period 60
```

Related Commands

Command	Description
graceful-restart helper	Enables the OSPF graceful-restart helper.

Platform Description N/A

2.25 graceful-restart helper

Use this command to enable the graceful restart helper function. Use the **no** form of this command to restore the default setting.

graceful-restart helper disable

no graceful-restart helper disable

graceful-restart helper { **strict-lsa-checking** | **internal-lsa-checking**}
no graceful-restart helper {**strict-lsa-checking** | **internal-lsa-checking**}

Parameter Description

Parameter	Description
Disable	Disables the device to assist other devices in performing GR.
strict-lsa-checking	Checks the change of the LSA of types 1-5 and 7 to determine whether the network changes. If yes, the GR helper will be disabled.
internal-lsa-checking	Checks the change of the LSA of types 1–3 to judge the network whether changes. If so, the GR helper will be disabled.

Defaults The GR helper is enabled by default.
The router enabled with the GR helper does not check the LSA change by default.

Command Mode Routing process configuration mode

Usage Guide Use this command to enable the GR helper. When one neighbor device performs graceful restart, the Grace-LSA is advertised to all neighbors. If the device enabled with the GR helper receives the Grace-LSA, it will become the GR Helper to help the neighbors perform GR. The **disable** option means that it is not allowed to perform the GR helper function for any device in GR.
The GR helper does not check the network change by default. The convergence is not performed again until the GR is implemented even if the network changes. Use the **strict-lsa-checking orinternal-lsa-checking** command to enable quick check for the changed network during the GR. The former checks any LSA (types 1-5,7) that stands for the network information, the latter checks the LSA that stands for the AS inner-area route. In the large scale network, it is not recommended to enable the LSA check option because the local network changes trigger the ending of the GR, decreasing the convergence speed of the entire network.

Configuration Examples The following example disables the GF helper and modifies the policy of checking network changes.

```
Ruijie(config)# router ospf1
Ruijie(config-router)# graceful-restart helper disable
Ruijie(config-router)# no graceful-restart helper disable
Ruijie(config-router)# graceful-restart helper
strict-lsa-checking
```

Related Commands

Command	Description
graceful-restart	Enables GR on the device.

Platform Description N/A

2.26 ip ospf area

Use this command to add the interface to OSPF routing process. Use the **no** form of this command to restore the default setting.

ip ospf *process-id* **area** *area-id*

no ip ospf *process-id* **area** *area-id*

Parameter Description

Parameter	Description
process-id	OSPF process ID. Range: 1-65535.
area *area-id*	OSPF area of the interface. It can be an integer or an IPv4 prefix.

Defaults OSPF routing process is disabled by default.

Command Mode Interface configuration mode

Usage Guide Run this command to add all IPs of the interface to OSPF instance.
The network command of instance can also add the interface to OSPF instance. When two commands are run at the same time, the configuration on the interface takes effect first.

Configuration Examples The following example enables OSPF process on the interface fastethernet 0/0 to join the specified area.

```
Ruijie(config)# int fastethernet 0/0
Ruijie(config-if-FastEthernet 0/1)# ip ospf 1 area 2
```

Related Commands

Command	Description
show ip ospf interface	Displays the OSPF process on the corresponding interface.

Platform Description N/A

2.27 ip ospf authentication

Use this command to configure the authentication type. Use the **no** form of this command to restore the default setting.

ip ospf authentication [**message-digest** | **null**]

no ip ospf authentication

Parameter

Parameter	Description

Description

message-digest	Enables MD5 authentication on the interface.
Null	Enables no authentication.

Defaults No authentication mode is configured and that of the local area is used on the interface by default.

Command Mode Interface configuration mode

Usage Guide Plaintext authentication is applicable when **no** option is used with the command. Note that the no form of this command restores the default value. Whether authentication is used actually depends on authentication mode configured for the local area of the interface. If authentication mode is configured as **null,** no authentication is enabled. When both the interface and its area are configured with authentication, the one for the interface takes precedence.

Configuration Examples The following example configures MD5 authentication for OSPF on fastEthernet 0/1.

```
Ruijie (config)#interface fastEthernet0/1
Ruijie(config-if-FastEthernet 0/1)# ipaddress172.16.1.1
255.255.255.0
Ruijie(config-if-FastEthernet 0/1)# ip ospf authentication
message-digest
```

Related Commands

Command	Description
area authentication	Enables authentication and defines authentication mode in the OSPF area.
ip ospf authentication-key	Configures the plain text authentication key.
ip ospf message-digest-key	Configures the MD5 authentication key.

Platform Description N/A

2.28 ip ospf authentication-key

Use this command to configure the OSPF plain text authentication key in interface configuration mode. Use the **no** form of this command to restore the default setting.

ip ospf authentication-key [**0 | 7**] *key*

no ip ospf authentication-key

Parameter Description

Parameter	Description
0	Displays the key in plain text.
7	Displays the key in cipher text.

Key	Key containing at most eight characters.

Defaults N/A

Command Mode Interface configuration mode

Usage Guide The **ip ospf authentication-key** command configures the key that will be inserted in all OSPF packet headers. As a result, if the keys are inconsistent, the OSPF neighbor relationship cannot be established between two devices directly connected, and thus route information exchange is impossible.
The keys may vary by interface, but the devices that are connected to the same physical network segment must use the same key.
To enable the OSPF area authentication, execute the area authentication command in routing process configuration mode.
The authentication can be enabled separately on an interface by executing the ip ospf authentication command in interface configuration mode. When both the interface and the area are configured with authentication, the one for the interface takes precedence.

Configuration Examples The following example configures the OSPF authentication key ospfauth for fast Ethernet *0/1*.

```
Ruijie (config)#interfacefastEthernet0/1
Ruijie(config-if-FastEthernet 0/1)# ipaddress172.16.1.1
255.255.255.0
Ruijie(config-if-FastEthernet 0/1)# ip ospf authentication-key ospfauth
```

Related Commands

Command	Description
area authentication	Enables OSPF area authentication and defines authentication mode
ip ospf authentication	Enables authentication on the interface and defines authentication mode

Platform Description N/A

2.29 ip ospf bdf

Use this command to enable or disable the BFD on the specified OSPF interface. Use the **no** form of this command to restore the default setting.
ip rip bfd [**disable**]
no ip ospf bfd [**disable**]

Parameter Description

Parameter	Description

Disable	Disables BFD on the specified OSPF interface.

Defaults BFD is not configured by default, and the BFD configuration in OSPF process configuration mode shall prevail.

Command Mode Interface configuration mode

Usage Guide The **ip ospf bfd** in interface configuration mode command takes precedence over the **bfd all-interfaces** command in routing process configuration mode.
You can use this command to enable the BFD on the specified interface according to the actual environment. You can also use the bfd all-interfaces command in OSPF process configuration mode to enable BFD on all OSPF interfaces and the **ip rip bfd disable** command to disable BFD on the specified interface.

Configuration Examples N/A

Related Commands

Command	Description
router ospf	Creates the OSPF routing process and enters routing process configuration mode.
bdf all-interfaces	Enables the BFD on all OSPF interfaces.

Platform Description N/A

2.30 ip ospf cost

Use this command to configure the cost (OSPF metric) of the OSPF interface for sending a packet in interface configuration mode. Use the **no** form of this command to restore the default setting.
ip ospf cost *cost*
no ip ospf cost

Parameter Description

Parameter	Description
Cost	OSPF interface cost in the range from 0 to 65535

Defaults The default interface cost is calculated as follows:
Reference bandwidth/Bandwidth
The reference bandwidth is *100* Mbps by default.

Command Mode Interface configuration mode

Usage Guide By default, the OSPF interface cost is 100Mbps/Bandwidth, where Bandwidth is the interface bandwidth configured with the bandwidth command in interface configuration mode.
The default costs of different types of lines are as follows:

- 64K serial line: 1562
- E1 line: 48
- 10M Ethernet: 10
- 100M Ethernet: 1

The OSPF cost configured with the **ip ospf cost** command will overwrite the default configuration.

Configuration Examples The following example configures the OSPF cost of fastEthernet 0/1 to100.

```
Ruijie(config)# interfacefastEthernet0/1
Ruijie(config-if-FastEthernet 0/1)# ipospfcost100
```

Related Commands

Command	Description
Bandwidth	Specifies the interface bandwidth. This setting does not affect the data transmission rate.
show ip ospf	Displays the OSPF global configuration information

Platform Description N/A

2.31 ip ospf database-filter all out

Use this command to stop advertising LSAs of an interface, that is, the LSA update packets are not sent on the interface. Use the **no** form of the command to restore the default setting.
ip ospf database-filter all out
no ip ospf database-filter

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled and all LSA update packets can be sent on the interface by default.

Command Mode Interface configuration mode

Usage Guide To stop sending LSA update packets on the interface, enable this function on the interface.
Then, the device maintains the neighboring connections and accepts LSAs from neighbors, but stops

sending LSAs to neighbors.

Configuration Examples The following example stops sending LSA update packets of fastEthernet 0/1.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# ip address 172.16.10.1 255.255.255.0
Ruijie(config-if-FastEthernet 0/1)# ip ospf database-filter all out
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.32 ip ospf dead-interval

Use this command to configure the interval for determining the death of an interface neighbor in interface configuration mode. Use the **no** form of this command to restore the default setting.

ip ospf dead-interval { *seconds* **| minimal hello-multiplier** *multiplier* }

no ip ospf dead-interval

Parameter Description

Parameter	Description
Seconds	Defines the interval for determining the neighbor death in seconds. The range is from 0 to 2,147,483,647.
minimal	Indicates that the Fast Hello function is enabled to set the dead interval to 1s.
hello-multiplier *multiplier*	Indicates the number of Hello packets sent per second in the Fast Hello function. The value ranges from 3 to 20.

Defaults The value of dead-interval is 4 times the interval configured with the **ip ospf hello-interval** command by default.

Fast Hello is disabled by default.

Command Mode Interface configuration mode

Usage Guide The OSPF dead interval is contained in the Hello packet. If OSPF does not receive a Hello packet from a neighbor within the dead interval, it declares that the neighbor is invalid and deletes this neighbor record form the neighbor list. By default, the dead interval is four times the Hello interval. If the Hello interval is modified, the dead interval is modified automatically.

When using this command to manually modify the dead interval, pay attention to the following issues:

1. The dead interval cannot be shorter than the Hello interval.
2. The dead interval must be the same on all routers in the same network segment.

OSPF supports the Fast Hello function.

After the OSPF Fast Hello function is enabled, OSPF finds neighbors and detects neighbor failures faster. You can enable the OSPF Fast Hello function by specifying the **minimal** and **hello-multiplier** keywords and the **multiplier** parameter. The **minimal** keyword indicates that the death interval is set to 1s, and **hello-multiplier** indicates the number of Hello packets sent per second. In this way, the interval at which the Hello packet is sent decreases to less than 1s.

If the Fast Hello function is configured for a virtual link, the Hello interval field of the Hello packet advertised on the virtual link is set to 0, and the Hello interval field of the Hello packet received on this virtual link is ignored.

Configuration Examples

The following example configures the interval for determining the death of the OSPF neighbor on fastEthernet 0/1 to30seconds.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# ip address 172.16.10.1 255.255.255.0
Ruijie(config-if-FastEthernet 0/1)# ip ospf dead-interval30
```

The following example configures the value of hello-multiplier to3.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# ip address 172.16.10.1 255.255.255.0
Ruijie(config-if-FastEthernet 0/1)# ip ospf dead-interval minimal
hello-multiplier 3
```

Related Commands

Command	Description
ip ospf hello-interval	Specifies the interval at which the OSPF sends Hello packets
show ip ospf interface	Displays OSPF interface information.

Platform Description

N/A

2.33 ip ospf disable all

Use this command to prevent the specified interface from generating OSPF packets. Use the **no** form of this command to restore the default setting.

ip ospf disable all

no ip ospf disable all

Parameter Description

Parameter	Description
N/A	N/A

Defaults OSPF packets are generated on the specified interface by default.

Command Mode Interface configuration mode

Usage Guide The interface configured with this command will ignore whether the network areas are matched. After this command is configured, an interface will not generate OSPF packets even if the interface belongs to the network; therefore, the interface does not receive or send any OSPF packets or participate in OSPF calculation.

Configuration Examples The following example prevents the specified interface from generating OSPF packets.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# ip address172.16.10.1 255.255.255.0
Ruijie(config-if-FastEthernet 0/1)# ip ospf disable all
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.34 ip ospf fast-reroute protection

Use this command to specify the loop-free alternate (LFA) protection mode for an interface. Use the **no** form of this command to restore the default setting.

ip ospf fast-reroute protection { **node | link-node | disable** }

no ip ospf fast-reroute protection

Parameter Description

Parameter	Description
Node	Enables LFA node protection.
link-node	Enables LFA link node protection.
Disable	Disables LFA protection.

Defaults LFA node protection is enabled by default.

Command Mode Interface configuration mode

Usage Guide Enabling the **fast-reroute lfa** command in OSPF process configuration mode will enable OSPF fast reroute and generate a backup route for the master route according to the specified LFA protection mode in interface configuration mode. By default, link protection is enabled on each OSPF interface. In this protection mode, the failure of a master link does not affect forwarding on the backup route.

Use the **node** parameter to enable node protection for an interface, that is, the neighbor node of a master link does not affect forwarding on the backup route.
Similarly, use the **link-node** parameter to protect the link and neighbor link of a master route at the same time.
Use the **disable** parameter to disable the LFA protection function for an interface, that is, a backup entry is not generated for the routes with this interface as the next hop.

Configuration Examples The following example sets OSPF LFA fast reroute to link and node protection:

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# ip address 172.16.10.1 255.255.255.0
Ruijie(config-if-FastEthernet 0/1)# ip ospf fast-reroute protection link-node
```

Related Commands

Command	Description
fast-reroute	Enables OSPF fast reroute.

Platform Description N/A

2.35 ip ospf fast-reroute no-eligible-backup

Use this command in interface configuration mode to exclude an OSPF interface as a backup interface in OSPF fast reroute calculation. Use the **no** form of this command to restore the default setting.
ip ospf fast-reroute no-eligible-backup
no ip ospf fast-reroute no-eligible-backup

Parameter Description

Parameter	Description
N/A	N/A

Defaults An OSPF interface can serve as a backup interface by default.

Command Mode Interface configuration mode

Usage Guide If an interface has small superfluous bandwidth or may fail with the master interface at the same time, this interface is not suitable to act as a backup interface. In this case, this command is used.

Configuration Examples The following example excludes FastEthernet 0/1 as a backup interface in OSPF fast reroute calculation.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# ip address 172.16.10.1 255.255.255.0
Ruijie(config-if-FastEthernet 0/1)# ip ospf fast-reroute no-eligible-backup
```

Related Commands

Command	Description
fast-reroute	Enables OSPF fast reroute.

Platform Description N/A

2.36 ip ospf hello-interval

Use this command to set the interval for sending Hello packets in interface configuration mode. Use the **no** form of this command to restore the default setting.

ip ospf hello-interval *seconds*

no ip ospf hello-interval

Parameter Description

Parameter	Description
Seconds	Interval for sending Hello packets in seconds. The range is from1 to 65535.

Defaults The defaults are as follows:

10secons for Ethernet

10seconsfor PPP or HDLC encapsulated interfaces

10secons for frame relay PTP interfaces

30secons for non-frame relay PTP sub-interface and X.25 interfaces

Command Mode Interface configuration mode

Usage Guide The interval of sending the Hello packets is included in the Hello packet. A shorter interval means that OSPF detects the topological change faster, which will increase network traffic. The Hello packet sending intervals for all the devices in the same network segment must be the same. To manually modify the interval to determine neighbor death, ensure that the Hello packet sending interval cannot be greater than dead-interval of the neighbor.

Configuration Examples The following example configures the interval of sending the Hello packets on fastEthernet 0/1 to15.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# ip address172.16.10.1 255.255.255.0
Ruijie(config-if-FastEthernet 0/1)# ip ospf hello-interval15
```

Related Commands

Command	Description
ip ospf dead-interval	Sets the interval for determining the death of the OSPF neighbor.

Platform Description N/A

2.37 ip ospf message-digest-key

Use this command to configure the MD5 authentication key in interface configuration mode. Use the **no** form of this command to restore the default setting.

ip ospf message-digest-key *key-id* **md5** [**0 | 7**] *key*

no ip ospf message-digest-key *key-id*

Parameter Description

Parameter	Description
Key	Key of up to 16 characters
0	Displays the key in plain text.
7	Displays the key in cipher text.
key-id	Key identifier in the range from1 to 255

Defaults No MD5 key is configured by default.

Command Mode Interface configuration mode

Usage Guide The **ip ospf message-digest-key** command configures the key that will be inserted in all OSPF packet headers. As a result, if the keys are inconsistent, the OSPF neighboring relationship cannot be established between two devices directly connected, and thus route information exchange is impossible.

The keys can be different for different interfaces, but the devices that are connected to the same physical network segment must be configured with the same key. For neighbors, the same key identifier must correspond to the same key.

To enable OSPF area authentication, execute the **area authentication** command in routing process configuration mode. The authentication can be enabled separately on an interface by executing the **ip ospf authentication** command in interface configuration mode. When both the interface and the area are configured with authentication, the one for the interface takes precedence.

The RGOS software supports smooth modification of MD5 authentication keys, which shall be added before deleted. When an MD5 authentication key of the device is added, the device will regard other devices have not had new keys and thus send multiple OSPF packets by using different keys, till it confirms that the neighbors have been configured with new keys. When all devices have been configured with new keys, it is possible to delete the old key.

Configuration Examples The following example adds a new OSPF authentication key "hello5" with key ID 5 for fastEthernet 0/1.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# ip address 172.16.24.2 255.255.255.0
```

```
Ruijie(config-if-FastEthernet 0/1)# ip ospf authentication message-digest
Ruijie(config-if-FastEthernet 0/1)# ip ospf message-digest-key 10 md5 hello10
Ruijie(config-if-FastEthernet 0/1)# ip ospf message-digest-key 5md5 hello5
```

When all neighbors are added with new keys, the old keys shall be deleted for all devices.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# no ip ospf message-digest-key10md5
hello10
```

Related Commands

Command	Description
area authentication	Enables OSPF area authentication and defines authentication mode.
ip ospf authentication	Enables authentication on the interface and defines authentication mode.

Platform Description N/A

2.38 ip ospf mtu-ignore

Use this command to disable the MTU check when an interface receives the database description packet. Use the **no** form of this command to restore the default setting.

ip ospf mtu-ignore

no ip ospf mtu-ignore

Parameter Description

Parameter	Description
N/A	N/A

Defaults MTU check is disabled by default.

Command Mode Interface configuration mode

Usage Guide After receiving the database description packet, the device will check whether the MTU of the neighbor interface is the same as its own MTU. If the received database description packet indicates an MTU greater than the interface's MTU, the neighboring relationship cannot be established. This can be fixed by disabling the MTU check.

Configuration Examples The following example disables the MTU check function on fastEthernet 0/1.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# ip ospf mtu-ignore
```

Related

Command	Description

Commands		
	N/A	N/A

Platform Description N/A

2.39 ip ospf network

Use this command to configure the OSPF network type in interface configuration mode. Use the **no** form of this command to restore the default setting.

ip ospf network { **broadcast | non-broadcast | point-to-multipoint [non-broadcast] | point-to-point}**

no ip ospf network

Parameter Description

Parameter	Description
Broadcast	Sets the OSPF network type as the broadcast type.
non-broadcast	Sets the OSPF network type as the non-broadcast multi-path access type, i.e. NBMA network.
point-to-multipoint [non-broadcast]	Sets the OSPF network type as the point-to-multipoint type. The value is the point-to-multipoint broadcast type by default. The non-broadcast option means the point-to-multipoint non-broadcast type.
point-to-point	Sets the OSPF network type as the point-to-point type.

Defaults The default configurations are as follows:

PTP network type: Point-to-Point Protocol(PPP), Serial Line Internet Protocol(SLIP), frame relay point-to-point (PTP) sub-interface, X.25 PTP sub-interface encapsulation

NBMA network type: frame relay (except for PTP sub-interface), X.25 encapsulation (except for PTP sub-interface)

Broadcast network type: Ethernet encapsulation

By default, the network type is the point-to-multipoint network type.

Command Mode Interface configuration mode

Usage Guide Networks are divided into three types according to the transmission feature of media:

- Broadcast network (Ethernet, token ring and Fiber Distributed-Data Interface (FDDI))
- Non-broadcast network (frame relay and X.25)
- PTP network (High-Level Data Link Control (HDLC), PPP and SLIP)
- The non-broadcast network is further divided into two sub-types by the OSPF operation mode:
- Non-broadcast multi-path access (NBMA) type. NBMA requires all interconnected devices can

directly communicate to each other, and only full mesh type connection can meet this requirement. There is no problem in using the Switching Virtual Circuit (SVC)(such as X.25) connections, but it is difficult in case of networking with Permanent Virtual Circuit (PVC) (such as frame relay). The OSPF on the NBMA network operates similarly to that on the broadcast network, where the Designated Device shall be elected to advertise the link state of the NBMA network.

- Point-to-multipoint network type. If the network topology is not a full mesh type non-broadcast network, the OSPF requires the network type to be configured as the point-to-multipoint network type. In the point-to-multipoint network type, OSPF regards all inter-device connections as PTP links and does not participate in the election of the designated device. The point-to-multipoint network type is further divided into the broadcast type and the non-broadcast type. For the non-broadcast type, it is required to manually configure the static neighbor.
- Whatever the default network type of the interface, you must set it to the broadcast network type. For example, the non-broadcast multi-path access network (frame relay and X.25) can be configured as broadcast network, so that the configuration of neighbors can be omitted during the OSPF routing process configuration. The X.25 map and frame-relay map commands may enable the X.25 and frame relay networks with broadcasting capability, so that the OSPF can regard such networks as X.25 and frame relay as broadcast network.
- The interface of the point-to-multipoint network can be configured with one or more neighbors. When the OSPF is configured as the point-to-multipoint network type, multiple host routes may be generated. In contrast to the broadcast network type, the point-to-multipoint network type features the following benefits:
- Easy configuration without need to configure neighbors or election of the designated device
- Small cost, without needing the fully meshed topology

For the dial-up network, frame relay and X.25 network, to manually configure the IP address mapping table, the keyword "broadcast" must be specified to support broadcast.

Configuration Examples

The following example configures the frame relay interface network as the broadcast type, which is applicable to the full mesh type frame relay connections.

```
Ruijie(config)# interfaceSerial 1/0
Ruijie(config-if-Serial 1/0)# ipaddress172.16.24.4
255.255.255.0
Ruijie(config-if-Serial 1/0)# encapsulationframe-relay
Ruijie(config-if-Serial 1/0)# ipospfnetworkbroadcast
The following example configures the frame relay interface network as the
point-to-multipoint type, which is applicable tothe non-full-mesh type frame
relay connections.
Ruijie(config)# interfaceSerial1/0
Ruijie(config-if-Serial 1/0)# ipaddress172.16.24.4
255.255.255.0
Ruijie(config-if-Serial 1/0)# encapsulationframe-relay
Ruijie(config-if-Serial 1/0)# ip ospf network point-to-multipoint
```

The following example configures the frame relay interface network as the broadcast type, with the

designated device/backup designated device (DR/BDR) specified, which is applicable to the full or partial mesh type frame relay connections. The following configuration needs to be done on all branch node devices and non-designated devices (limited to become the DR/BDR).

```
Ruijie(config)# interfaceSerial1/0
Ruijie(config-if-Serial 1/0)# ipaddress172.16.24.4
255.255.255.0
Ruijie(config-if-Serial 1/0)# encapsulation frame-relay
Ruijie(config-if-Serial 1/0)# ip ospf network broadcast
Ruijie(config-if-Serial 1/0)# ip ospf priority0
```

Related Commands

Command	Description
dialer map ip	Defines the mapping between IP address and dialing number.
frame-relay map	Defines the mapping between IP address and frame DLCI.
neighbor(OSPF)	Defines the IP address of neighbor applicable to NBMA network type and point-to-multipoint non-broadcast type only.
X25 map	Defines the mapping between IP address and X.25 network address.

Platform Description N/A

2.40 ip ospf priority

Use this command to configure the OSPF priority in interface configuration mode. Use the **no** form of this command to restore the default setting.

ip ospf priority *priority*

no ip ospf priority

Parameter Description

Parameter	Description
priority	Sets the OSPF priority of the interface in the range from 0 to 255.

Defaults The default is 1.

Command Mode Interface configuration mode

Usage Guide The interface priority is included in the Hello packet. When DR/BDR election occurs in the OSPF broadcast type network, the device with higher priority will become the DR or BDR. If the devices have the same priority, the one with higher ID will become the DR or BDR. The device with priority 0

cannot become DR or BDR. This command is valid only for OSPF broadcast and non-broadcast network types.

Configuration Examples The following example configures the priority offastethernet 0/1 as 0.

```
Switch(config)#interface fastethernet 0/1
Ruijie(config-if-FastEthernet 0/1)# ipospfpriority0
```

Related Commands

Command	Description
ip ospf network	Configures the network type of the interface.

Platform Description N/A

2.41 ip ospf retransmit-interval

Use this command to define the interval for sending the link state update (LSU) packet on the interface in interface configuration mode. Use the **no** form of this command to restore the default setting.

ip ospf retransmit-interval *seconds*

ip ospf retransmit-interval

Parameter Description

Parameter	Description
Seconds	Interval for sending the LSU packets in seconds. The range is from 1 to 65535. This interval must be greater than the round trip delay of packets between two neighbors.

Defaults The default is 5.

Command Mode Interface configuration mode

Usage Guide After the device sends an LSU packet, the LSU packet stays in the transmission buffer queue. If no confirmation from the neighbor is obtained in the interval defined with the **ip ospf retransmit-interval** command, the LSU will be sent once again.

In serial lines or virtual links, the retransmission interval shall be slightly larger. The LSU packet retransmission interval of virtual links is defined with the area virtual-link command followed with the keyword retransmit-interval.

Configuration Examples The following example configures the LSU packet retransmission interval on fastEthernet 0/1 as 10 seconds.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# ip ospf retransmit-interval 10
```

Related Commands

Command	Description
area virtual-link	Defines an OSPF virtual link.

Platform Description N/A

2.42 ip ospf source-check-ignore

Use this command to disable the source address check in the point-to-point link. Use the **no** form of this command to restore the default setting

ip ospf source-check-ignore

no ip ospf source-check-ignore

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode Interface configuration mode

Usage Guide For OSPF, the source address of the received packet is required to be in the same network segment with the receiving interface. However, in a point-to-point link, the addresses of two ends of the link are individually set, and they are not required to be in the same network segment. The peer address is informed during the process of point-to-point link negotiation; therefore, OSPF will check whether the source address of the packet is the informed one. If no, the OSPF regards this packet as illegal and drops it. In some applications, the addresses informed during the negotiation are shielded. You need to disable the source address check to ensure the normal establishment of OSPF neighbors. The source address check shall be never enabled, especially for the unnumbered interfaces.

Configuration Examples The following example disables the source address check function in the point-to-point link.

```
Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip ospf source-check-ignore
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.43 ip ospf transmit-delay

Use this command to define the LSU packet transmission delay in interface configuration mode. Use the **no** form of this command to restore the default setting.

ip ospf transmit delay *seconds*

no ip ospf transmit delay

Parameter Description

Parameter	Description
Seconds	LSU packet transmission delay in seconds in the range from 1 to 65535.

Defaults The default is 1.

Command Mode Interface configuration mode

Usage Guide Before the LSU packet is transmitted, the Age field in all the LSAs of the packet will be increased by the value defined with the **ip ospf transmit-delay** command in interface configuration mode. The configuration of this parameter shall consider the transmission and line transmission delay of the interface. For low-rate lines, the transmission delay of the interface shall be slightly larger. The LSU packet transmission delay of the virtual link is defined with the **area virtual-link** command followed with the keyword retransmit-interval.

The RGOS software will resend or request resending the LSA with Age up to 3600. If no update is obtained in time, the aged LSA will be cleared from the link state database.

Configuration Examples The following example configures the transmission delay of fastEthernet 0/1 as 10.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# ip ospf transmit-delay 10
```

Related Commands

Command	Description
area virtual-link	Defines an OSPF virtual link.

Platform Description N/A

2.44 ispf enable

Use this command to enable the ISPF function. Use the **no** form of this command to disable the ISPF function.

ispf enable

no ispf enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults ISPF is disabled by default.

Command Mode Routing process configuration mode

Usage Guide OSPF adopts the SPF algorithm to calculate the network topology within an area. SPF algorithm is run for each area independently,

Incremental SPF algorithm (ISPF) is an area-based algorithm, If the topology changes, the ISPF algorithm will calculate only the affected notes of the topology rather than calculating the entire tree, which speeds up the OSPF route convergence and saves CPU resources.

Because the ISPF algorithm is not shared among routers, each router within the same network can have a unique ISPF algorithm. To ensure a faster OSPF convergence, the ISPF function should be enabled on every router within the network.

Enabling ISPF function only affects the choice of topology calculating algorithm for OSPF. So you can configure the delay time for the ISPF with the **timers spf** command and the **timers throttle spf** command as well.

Configuration Examples The following example enables the ISPF function.

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# ispf enable
```

The following example enables the ISPF function on the specified VRF.

```
Ruijie(config)# router ospf 1 vrf vpn1
Ruijie(config-router)# ispf enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.45 log-adj-changes

Use this command to enable the logging of the neighbor state changes. Use the **no** form of the command to disable this function.

log-adj-changes [**detail**]

no log-adj-changes [**detail**]

Parameter

Parameter	Description

Description

Detail	Records the detail of changes.

Defaults This function is enabled by default. Without the detail parameter, the system records the logs that the neighbor enters or exits the full state.

Command Mode Routing process configuration mode

Usage Guide N/A

Configuration Examples The following example logs the neighbor state changes.

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# log-adj-changes detail
```

Related Commands

Command	Description
show ip ospf	Displays the OSPF global configuration information.

Platform Description N/A

2.46 max-concurrent-dd

Use this command to specify the maximum number of DD packets that can be processed (initiated or accepted) at the same time. Use the **no** form of this command to restore the default setting.

max-concurrent-dd *number*

no max-concurrent-dd

Parameter Description

Parameter	Description
Number	Maximum number of DD packets in the range from1 to 65535

Defaults The default is 5.

Command Mode Routing process configuration mode

Usage Guide When a router is exchanging data with multiple neighbors, its performance will be affected. This command is configured to limit the maximum number of DD packets that each OSPF instance can have at the same time.

Configuration The following example sets the maximum number of DD packets to 4.

Examples After the configuration, the device can initiate to interact with four neighbors and can concurrently accept the interaction. That is, the device can interact with a maximum of eight neighbors.

```
Ruijie(config)# routerospf10
Ruijie(config-router)# max-concurrent-dd4
```

Related Commands

Command	Description
router ospf max-concurrent-dd	Sets the maximum number of neighbors allowed in concurrent interaction for all OSPF routing processes.

Platform Description N/A

2.47 max-metric

Use this command to set the maximum metric of the router-lsa, so that this routing device will not firstly be used as the transmission node by other devices in SPF computing. Use the **no** form of this command to restore the default setting.

max-metric router-lsa [external-lsa *[max-metric-value]]* [**include-stub**] [**on-startup** *[seconds]]* [**summary-lsa** *[max-metric-value]]* [**on-neigborup** [*seconds*]]

no max-metric router-lsa [external-lsa *[max-metric-value]]* [**include-stub**] [**on-startup** *[seconds]]* [**summary-lsa** *[max-metric-value]]* [**on-neigborup** [*seconds*]]

Parameter Description

Parameter	Description
router-lsa	Configures the maximum metric (0XFFFF) of non-stub links in the Router LSA.
external-lsa	Uses the maximum metric instead of the external-lsa metric (including the Type-5 and Type-7).
max-metric-value	Maximum metric of the LAS. The range is 1 to 16777215.The default value is 16711680,
include-stub	Configures the maximum metric of the stub links in the Router LSA.
on-startup	Advertises the maximum metric when the routing device starts up.
on-neighborup	Advertise the maximum metric when the first neighbor turns to Full state.
Seconds	Interval of advertising the maximum metric. The range is 5 to 86400. The default value is 600 seconds.
summary-lsa	Uses the maximum metric to replace the summary LSA metric. (including Type-3 and Type-4)

Defaults The normal metric LSAs are used by default.

Command Mode Routing process configuration mode

Usage Guide With the **max-metric router-lsa** command enabled, the maximum metric of non-stub links in the Router LSA generated by the routing device is set. The link's normal metric is restored after canceling this configuration or reaching the timer.

By default, with this command enabled, the normal metric of the stub links is still advertised, which is the output interface cost. If the **include-stub** parameter is configured, the maximum metric of the stub links will be advertised.

When the device acts as an ABR, if no interval flow transmission is expected, use the **summary-lsa** parameter to set the summary LSA as the maximum metric.

When the device acts as an ASBR device, if no external flow transmission is expected, use the **external lsa** parameter to set the external LSA as the maximum metric.

The **max-metric router-lsa** command is usually used in the following scenes:

The device is restarted, which generally makes the IGP protocol converge faster, so that other devices attempt forwarding the dataflow through the new started-up device. If the current device remains establishing a BGP routing table, the packets sent to these networks will be discarded due to some BGP routings have not been learned. In this case, use the **on-startup** parameter to set certain delay, so that this device can serve as a transmission node after restarting.

The device is added into the network without being used for dataflow transmission. If the backup path exists, the current device is not used for the dataflow transmission. Otherwise, this device is still used to transmit the dataflow.

Remove the device from the network gracefully. With this command enabled, the current device advertises the maximum metric to all devices, as that the other devices in this network can choose the backup path to for the dataflow transmission before the current device is removed.

For the OSPF implementation in the earlier versions (RFC 1247 or earlier versions), the links with the maximum metric (0xFFFF) in the LSA will not participate in the SPF calculation, that is, no dataflow will be sent to the router that have generated these LSAs.

Use the Overlay scene of OSPF in Underlay, the overlay tunnel may rely on underlay route. When the OSPF neighbor turns to the full state, underlay route is reachable but the overlay tunnel may not be established, which may cause traffic interruption. Therefore, the **on-neighborup** parameter of **max-metric** should be enabled.

Configuration Examples The following example configures the LSA maximum metric as 100 seconds after starting the device.

```
Ruijie(config)# router ospf 20
Ruijie(config-router)# max-metric router-lsa on-startup 100
```

The following example configures the maximum advertisement metric as 100 seconds after the first neighbor turns to full state.

```
Ruijie(config)# router ospf 20
Ruijie(config-router)# max-metric router-lsa on-neighborup 100
```

Related Commands

Command	Description
show ip ospf	Displays the OSPF related configurations.

Platform Description N/A

2.48 neighbor

Use this command to define the OSPF neighbor in routing process configuration mode. Use the **no** form of this command to restore the default setting.

neighbor *ip-address* [**poll-interval** *seconds*] [**priority** *priority*] [**cost** *cost*]]

no neighbor *ip-address* [[**poll-interval**] [**priority**] | [cost]]

Parameter Description

Parameter	Description
ip address	IP address of the neighbor
poll-interval *seconds*	(Optional) Specifies the interval of polling neighbors in seconds. The range is from 0 to 2147483647. Only the non-broadcast (NBMA) network type supports this option.
priority *priority*	(Optional) Configures the priority of non-broadcast network neighbors. The range is from 0 to 255. Only the non-broadcast (NBMA) network type supports this option.
cost *cost*	(Optional) Configures the cost to each neighbor in point-to-multipoint network, not defined by default, where the cost configured on the interface will be used. The range is from 0 to 65535. Only the point-to-multipoint [non-broadcast] network type supports this option.

Defaults No neighbor is defined by default.
The default neighbor polling interval is 120 seconds.
The default NBMA neighbor priority is 0.

Command Mode Routing process configuration mode

Usage Guide The RGOS software must explicitly configure the neighbor information for every non-broadcast network neighbor. The IP address of a neighbor must be the master IP address of that neighbor interface.
In the NBMA network, if the neighbor device becomes inactive, in other words, if the Hello packet is not received within the device dead-interval, the OSPF will send more Hello packets to the neighbor. The interval at which the Hello packets are sent is called the polling interval. When the OSPF starts to work for the first time, it sends Hello packets only to the neighbor whose priority is not 0, so that the neighbor whose priority is set as 0 will not participate in the DR/BDR election. When the DR/BDR is generated, the DR/BDR sends the Hello packets to all neighbors to establish the neighbor relationship.
Since the point-to-multipoint non-broadcast network has no broadcast capability, neighbors cannot be

found dynamically. So, it is required to use this command to manually configure neighbor. In addition, it is possible to configure the cost to each neighbor through the cost option for the point-to-multipoint network type.

Configuration Examples The following example declares an OSPF non-broadcast network neighbor, with the IP address 172.16.24.2, priority 1 and polling interval 150 seconds.

```
Ruijie(config)# routerospf 20
Ruijie(config-router)# network 172.16.24.0 0.0.0.255 area 0
Ruijie(config-router)# neighbor 172.16.24.2 priority 1 poll-interval 150
```

Related Commands

Command	Description
ip ospf priority	Sets the interface priority.
ip ospf network	Sets the network type

Platform Description N/A

2.49 network area

Use this command to define which interfaces run OSPF and the OSPF areas they belong to in routing process configuration mode. Use the **no** form of this command to restore the default setting.
network *ip-address wildcard* **area** *area-id*
no network *ip-address wildcard* **area** *area-id*

Parameter Description

Parameter	Description
ip-address	IP address of the interface
Wildcard	Defines the comparison bits in the IP address, with 0 for exact match and 1 for no comparison
area-id	OSPF area identifier. An OSPF area is always associated with an address range. For easy of management, a subnet can be used as the OSPF area identifier.

Defaults No OSPF area is configured by default.

Command Mode Routing process configuration mode

Usage Guide The ip-address and wildcard parameters allow associating multiple interfaces with one OSPF area. To run OSPF on an interface, it is required to include the primary IP address and secondary IP address of the interface in the IP address range defined by the network area command. If only the secondary IP address is included, OSPF cannot be enabled on the interface.
You can determine the OSPF process that the interface takes part in by the means of the best match

if the IP address of the interface matches the IP address ranges defined by the network command in multiple OSPF processes.
The **ip ospf area** command of interface can also add the interface to OSPF instance. When two commands are run at the same time, the configuration on the interface takes effect first.

Configuration Examples

The following example defines:
Three areas: 0, 1 and 172.16.16.0
The interfaces whose IP addresses fall into the 192.168.12.0/24 range to area 1
The interfaces whose IP addresses fall into the 172.16.16.0/20 range to area 2
The remaining interface being assigned to area 0.

```
Ruijie(config)# routerospf 20
Ruijie(config-router)# network172.16.16.0
0.0.15.255 area172.16.16.0
Ruijie(config-router)# network192.168.12.0
0.0.0.255 area 1
Ruijie(config-router)# network0.0.0.0 255.255.255.255 area0
```

Related Commands

Command	Description
router ospf	Creates the OSPF routing process.

Platform Description

N/A

2.50 nsr

Use this command to enable the nonstop routing (NSR) function for the OSPF instance. Use the **no** form of this command to disable the NSR function.
Nsr
no nsr

Parameter Description

Parameter	Description
N/A	N/A

Defaults

NSR is disabled by default.

Command Mode

Routing process configuration mode

Usage Guide

NSR enables the device to recover link state and regenerate routes without the assistance from neighbors during active/standby switchover of distributed devices. The backup information includes adjacencies and OSPF state.
You need to enable either NSR or GR in the same OSPF process. That is, the NSR feature will be

disabled after the GR feature is enabled. Similarly, the GR feature will be disabled after NSR is enabled, and the GR Helper capability is still supported.
The active/standby switchover of distributed devices takes a period of time. If the OSPF dead interval is less than the switchover period, OSPF neighbors will be disconnected and the services will be interrupted. It is recommended to configure the OSPF dead interval longer than its default value. It is not recommended to enable the Fast Hello feature after NSR is enabled, because OSPF dead interval is less than 1 second when the Fast Hello feature is enabled and the OSPF neighbors are disconnected and NSR becomes ineffective.

Configuration Examples The following example enables NSR.

```
Ruijie(config)#router ospf 1
Ruijie(config-router)# nsr
```

Related Commands

Command	Description
router ospf	Creates the OSPF routing process.

Platform Description N/A

2.51 overflow database

Use this command to configure the maximum number of LSAs supported by the current OSPF instance. Use the **no** form of this command to restore the default setting.
overflow database *number* [**hard | soft**]
no overflow database

Parameter Description

Parameter	Description
Number	Maximum number of LSAs. The range is from 1 to 4294967294.
hard | soft	hard: shuts down the OSPF instance when the number of LSAs exceeds that number. soft: issues an alarm when the number of LSAs exceeds that number.

Defaults The maximum number of LSAs supported by the current OSPF instance is not restricted by default.

Command Mode Routing process configuration mode

Usage Guide To shut down the OSPF instance when the number of LSAs exceeds that number, use the hard parameter; otherwise, use the soft parameter.

Configuration The following example configures that OSPF instance 10 will be shut down when there are more than

Examples 10 LSAs.

```
Ruijie# config terminal
Ruijie(config)# router ospf 10
Ruijie(config-router)# overflow database 10 hard
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.52 overflow database external

Use this command to configure the maximum number of external LSAs and the waiting time from the overflow state to the normal state. Use the **no** form of this command to restore the default setting.

overflow database external *max-dbsize wait-time*

no overflow database external

Parameter Description

Parameter	Description
max-dbsize	Maximum number of external LSAs (the value shall be the same for all routing devices in the same AS). The range is from 0 to 2147483647.
wait-time	Waiting time of the routing device from the overflow status to normal status. The range is from 0 to 2147483647.

Defaults The maximum number of external-LSAs is not restricted by default.
If the maximum number of external-LSAs is restricted, the normal status cannot be restored when the maximum number is exceeded.

Command Mode Routing process configuration mode

Usage Guide When the number of external-LSAs exceeds the value of max-db size, the device enters the overflow state. Then no more external-LSA will be loaded and the external-LSAs generated locally will be cleared. After wait-time expires, the device restores to the normal state and external-LSAs are reloaded.

⚠ When using this function, ensure that all routers of the OSPF backbone area and common areas use the same max-db size value. Otherwise, the following situations occur:

⚠ The link status is inconsistent on the entire network and neighbors fail to achieve the Full state.

⚠ Incorrect routes occur, including loops.

AS-External-LSAs may be frequently retransmitted.

Configuration Examples The following example configures that the maximum number of external LSAs is 10, and it turns to the overflow status upon timeout, and the time interval attempting to restore from the overflow state to the normal state is 3 seconds.

```
Ruijie# configterminal
Ruijie(config)# routerospf10
Ruijie(config-router)# overflow database external10 3
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.53 overflow memory-lack

Use this command to allow OSPF to enter the OVERFLOW state when the memory lacks. Use the **no** form of this command to disable this function.

overflow memory-lack

no overflow memory-lack

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default

Command Mode Routing process configuration mode

Usage Guide The action of OSPF entering the OVERFLOW state is to discard the newly-learned external route and effectively prevent the memory from increasing.

It is possible that enabling this function causes the route loop in the whole network. To reduce that possibility, OSPF will generate a default route directing to the NULL port and this default route will exist in the OVERFLOW state.

Use the **clear ip ospf process** command to reset the OSPF and remove the OSPF OVERFLOW state.

Use the no form of this command to prevent the OSPF to enter the OVERFLOW state when the memory is insufficient, which may result in the constantly consumption of the memory resources. If the memory is exhausted to some degree, the OSPF instance will stop and all learned routes will be removed.

Configuration Examples The following example prevents the OSPF from entering the OVERFLOW state when the memory is insufficient.

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# no overflow memory-lack
```

Related Commands

Command	Description
clear ip ospf process	Resets the OSPF instances.
show ip protocols ospf	Displays the OSPF information.

Platform Description N/A

2.54 passive-interface

Use this command to configure the specified network interface or all interface as the passive interfaces. Use the **no** form of this command to restore the default setting.

passive-interface { **default |** *interface-type interface-number* | *interface-type interface-number ip-address* }

no passive-interface { **default |** *interface-type interface-number* | *interface-type interface-number ip-address* }

Parameter Description

Parameter	Description
interface-type interface-number	Interface to be set as a passive interface
Default	Sets all the interfaces as passive interfaces
interface-type interface-number ip-address	Sets the address of the specified interface as a passive address.

Defaults No interface is configured as a passive interface by default. All interfaces are allowed to receive or send OSPF packets.

Command Mode Routing process configuration mode

Usage Guide To prevent other devices in the network from dynamically learning the routing information of the device, set the specified network interface of this device as a passive interface or the IP address of the specified network interface as a passive address

Configuration Examples The following example configures fastEthernet 0/1 as a passive interface and the IP address of the interface 1.1.1.1 as the passive address.

```
Ruijie(config)# routerospf 30
Ruijie(config-router)# passive-interface fastEthernet 0/1
Ruijie(config-router)# passive-interface fastEthernet 0/1 1.1.1.1
```

Related Commands

Command	Description
show ip ospf interface	Displays the configuration information of the interface.

Platform Description N/A

2.55 redistribute

Use this command to redistribute the external routing information. Use the **no** form of this command to restore the default setting.

redistribute { **bgp | connected | isis** [*area-tag*] **| ospf** *process-id* **| rip | static** | **arp-host** } [{ **level-1 | level-1-2 | level-2** }] [**match { internal | external** [**1|2**] **|nssa-external** [**1|2**] }] [**metric** *metric-value*] [**metric-type** { *1|2* }] [**route-map** *route-map-name* **] [subnets] [tag** *tag-value* **]**

no redistribute { bgp | connected | isis [*area-tag*] **| ospf** *process-id* **| rip | static** | **arp-host} [{ level-1 | level-1-2 | level-2 }] [match { internal | external [1|2] | nssa-external [1|2]}] [metric** *metric-value* **] [metric-type {** *1|2* **}] [route-map** *route-map-name*] [**subnets**] [**tag** *tag-value*]

Parameter Description

Parameter	Description
Bgp	Redistribution from bgp
Connected	Redistribution from direct routes
isis *[area-tag]*	Redistribution from an IS-IS instance specified in area-tag
ospf *process-id*	Redistribution from an ospf instance specified in process-id in the range from 1 to 65,535
Rip	Redistribution from rip
Static	Redistribution from static routes
arp-host	Redistribution from host routes.
level-1 | level-1-2 | level-2	Configures IS-IS route redistribution. The parameter specifies a level, and routes of this level will be redistributed. Only level-2 IS-IS routes can be redistributed by default.
Match	Filters specified routes for configuring OSPF route redistribution. By default, all the OSPF routes are redistributed.
metric *metric-value*	Specifies the metric of an OSPF external LSA in the range from 0 to 16777214.
metric-type{1|2}	Sets the external routing type as E-1 or E-2.
route-map *route-map-name*	Redistribution filter rule
Subnets	Redistributes the routes of non standard networks.

tag *tag-value*	Sets the tag value of the routes redistributed to the OSPF in the range from 0 to 4294967295.

Defaults

Redistribution configuration is not supported by default.
If you configure OSPF redistribution, all subtype routes of the instance are redistributed.
If you configure ISIS redistribution, all level-2 subtype routes of the instance are redistributed.
In other cases, all routings of this type are redistributed.
The default metric of the redistribution BGP route is 1. The default metric of LSAs generated by routes of other types is 20.
The default value of metric-type is E-2.
No route-map is associated by default.

Command Mode

Route configuration mode

Usage Guide

After the command is configured, the router will become an ASBR, and the related routing information is imported into the OSPF domain and broadcasted to other OSPF routers through type-5 LSAs.
When you configure is route redistribution without the level parameter, level-2 routes can be redistributed by default. In initial redistribution configuration that carries the level parameter, routes of the specified level can be redistributed. When you save the configuration containing both level 1 and level 2, they are merged into level-1-2 for convenience. For details, see the configuration examples.
When you configure OSPF router distribution without the match parameter, the OSPF routes of all sub types are redistributed by default. Then the first configured match parameter is used as the original one. Only the routes matching the specific type can be redistributed. Use the no form of this command to restore the default configuration.
When you filter routes for redistribution by following the route-map rule, the match rule of the route-map rule is specific for the original redistribution parameters. The route-map rule works only when the redistributed OSPF routes follow the match rule.

The range of set metric is from 0 to 16777214 for the associated route-map. If the value exceeds the range, introducing a route fails.

The following are the rules for configuring the no form of the redistribute command:1. If the **no** form specifies some parameters, restore their default values.2. If the **no** form contains no parameter, delete the whole command. If the following configuration exists: redistribute isis 112 level-2 You can use the no redistribute isis 112 level-2command to modify the configuration. According to preceding rules, this command restores the level-2 parameter to the default value, namely level-2. Therefore, the configuration remains the same after the no form of the preceding command is executed. redistribute isis 112 level-2 To delete the whole command, use the following command: no redistribute isis 112

Configuration Examples

The following example redistributes routes of **ospf2** and **isis** isis-001 to the OSPF area.

```
Ruijie(config)# router ospf1
Ruijie(config-router)# redistribute ospf 2 subnets
Ruijie(config-router)# redistribute ospf2match
```

```
external 1 internal
Ruijie(config-router)# redistribute isisisis-001
Ruijie(config-router)# redistribute isisisis-001 level-1
```

The following example displays the output of the **show run** command.

```
router ospf 1
redistribute ospf 2 match external 1 internal subnets
redistribute isis isis-001 level-1-2
```

Related Commands

Command	Description
summary-address	Configures the aggregate route for the external route of the OSPF route area.
default-metric	Sets the default metric of the OSPF redistribution route.

Platform Description N/A

2.56 router ospf

Use this command to create the OSPF routing process in global configuration mode. Use the **no** form of this command to restore the default setting.

router ospf

router ospf *process-id* [**vrf** *vrf-name*]

no router ospf *process-id*

Parameter Description

Parameter	Description
process-id	ID of an OSPF process. If the process ID is not configured, process 1 is configured.
vrf-name	VRF of the configured OSPF process for products that support the VRF.

Defaults No OSPF routing process exists by default.

Command Mode Global configuration mode

Usage Guide Based on the original implementation, the RGOS10.1 adds the routing process ID to multi-instance OSPF. Different OSPF instances are mutually independent and can be approximately considered as two routing protocols that run independently.

Configuration The following example creates the OSPF routing process 10 within the specified vrf: vpn_1.

Examples

```
Ruijie(config)# router ospf10 vrf: vpn_1
```

Related Commands

Command	Description
show ip protocols	Displays the routing protocol information.
show ip ospf	Displays the OSPF information.

Platform Description N/A

2.57 router ospf max-concurrent-dd

Use this command to specify the maximum number of DD packets that can be processed (initiated or accepted) at the same time. Use the **no** form of this command to restore the default setting.

router ospf max-concurrent-dd *number*

no router ospf max-concurrent-dd

Parameter Description

Parameter	Description
Number	Maximum number of DD packets in the range from 1 to 65535.

Defaults The default is 10.

Command Mode Global configuration mode

Usage Guide When a routing device is exchanging data with multiple neighbors, its performance will be affected. This command is configured to limit the maximum number of DD packets that each OSPF instance can have (initiated or accepted) at the same time.

Configuration Examples The following example sets the maximum number of DD packets to 4.

After the configuration, the device can initiate to interact with four neighbors and can concurrently accept the interaction. That is, the device can interact with a maximum of eight neighbors.

```
Ruijie# configure terminal
Ruijie(config)# router ospfmax-concurrent-dd4
```

Related Commands

Command	Description
max-concurrent-dd	Sets the maximum number of the neighbors that the OSPF routing process can concurrently interact with.

Platform Description N/A

2.58 router ospf redistribute

Use this command to redistribute external routings based on VRF. Use the **no** form of this command to restore the default setting.

router ospf redistribute { **bgp** | **connected** | **isis** | **ospf** | **rip** | **static** | **arp-host** } [**route-map** *route-map-name*] [**vrf** *vrf-name*]

no rouer ospf redistribute { **bgp** | **connected** | **isis** | **ospf** | **rip** | **static** | **arp-host** } [**route-map** *route-map-name*] [**vrf** *vrf-name*]

Parameter Description

Parameter	Description
bgp	Redistribute from bgp
connected	Redistrite from direct routes
isis	Redistribute from IS-IS
ospf	Redistribute from OSPF
rip	Redistribute from RIP
static	Redistribute from static routes
arp-host	Redistribute from arp-host routes
route-map *route-map-name*	Redistribution filtering rule
vrf *vrf-name*	Redistribution VRF. Global VRF if not specified.

Defaults No redistribution is configured by default.
The default metric of redistributed BGP routing is 1, and that of LSA generated by other routings is 20.
By default, metric-type is E-2 and no route-map is associated.

Command Mode Global configuration mode

Usage Guide After this command is configured, the device turns into ASBR, imports routing information into OSPF area, and advertises the routing information as Type 5 LSAs to other OSPF routers in the domain.
If this command and instance **redistribute** are configured at the same time, the later one takes effect.

Configuration Examples The following example redistributes global VRF ISIS routes to OSPF

```
Ruijie(config)# router ospf redistribute isis
```

Related Commands

Command	Description
show ip ospf database	Displays routing information

Platform Description N/A

2.59 router-id

Use this command to set the router ID. Use the **no** form of this command to restore the default setting.

router-id *router-id*

no router-id

Parameter Description

Parameter	Description
router-id	Router ID in IP address form

Defaults The OSPF routing process will select the maximal interface IP address as the router ID by default. If the loopback interface of an IP address is not configured, the OSPF routing process will select the maximum IP address among all its physical interfaces as the router ID.

Command Mode Routing process configuration mode

Usage Guide You can configure any IP address as the router ID. However, the router ID should be unique. Note that once the router ID changes, the OSPF protocol will do a lot of processing. Therefore, it is not recommended to change the router ID. The device can be changed only when no LSA is generated.

Configuration Examples The following example modifies the router ID to 0.0.0.36.

```
Ruijie(config)# router ospf 20
Ruijie(config-router)# router-id0.0.0.36
```

Related Commands

Command	Description
show ip protocols	Displays the routing protocol information.

Platform Description N/A

2.60 show ip ospf

Use this command to display the OSPF information.

show ip ospf [*process-id*]

Parameter Description

Parameter	Description
process-id	OSPF process ID

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command displays the information of the OSPF routing process.

Configuration Examples The following example displays the output of the **show ip ospf** command.

```
Ruijie# show ip ospf
Routing Process "ospf 1" with ID 1.1.1.1
Domain ID type 0x0105, value 0x010101010101
Process uptime is 4 minutes
Process bound to VRF default
Memory Overflow is enabled.
Router is not in overflow state now.
Conforms to RFC2328, and RFC1583Compatibility flag isenabled
Supports only single TOS(TOS0) routes
Enable two-way-maintain
Supports opaque LSA
Supports Graceful Restart
This router is an ASBR (injecting external routing information)
Originating router-LSAs with maximum metric
Condition:on startup for 100 seconds, State:inactive
Advertise stub links with maximum metric in router-LSAs
Advertise summary-LSAs with metric 16711680
Advertise external-LSAs with metric 16711680
Unset reason:timer expired, Originated for 100 seconds
Unset time:00:02:02.080, Time elapsed: 00:23:54.656
SPF schedule delay 5 secs, Hold time between two SPFs 10 secs
Initial LSA throttle delay 0 msecs
Minimum hold time for LSA throttle 5000 msecs
Maximum wait time for LSA throttle 5000 msecs
Lsa Transmit Pacing timer 40 msecs, 10 LS-Upd
Minimum LSA arrival 1000 msecs
Pacing lsa-group:240 secs
Number of incomming current DD exchange neighbors 0/5
Number of outgoing current DD exchange neighbors 0/5
Number of external LSA 4. Checksum 0x0278E0
Number of opaque AS LSA 0. Checksum 0x000000
Number of non-default external LSA 4
External LSA database is unlimited.
Number of LSA originated 6
Number of LSA received 2
Log Neighbor Adjency Changes :Enabled
Graceful-restart disabled
```

```
Graceful-restart helper support enabled
Number of areas attached to this router: 1
BFD enabled
Area 0 (BACKBONE)
Number of interfaces in this area is 1(1)
Number of fully adjacent neighbors in this area is 1
Area has no authentication
SPF algorithm last executed 00:01:26.640 ago
SPF algorithm executed 4 times
Number of LSA 3. Checksum 0x0204bf
Area 1 (NSSA)
Number of interfaces in this area is 1(1)
Number of fully adjacent neighbors in this area is 0
Number of fully adjacent virtual neighbors through this area is 0
Area has no authentication
SPF algorithm last executed 02:09:23.040 ago
SPF algorithm executed 4 times
Number of LSA 6. Checksum 0x028638
NSSA Translator State is disabled, Stability Interval expired in 00:00:03
```

Field	Description
Router ID	ID of a router.
Process uptime	Effective time of the current OSPF process (the process does not take effect when device-id is 0.0.0.0)
Bou to VRF	VRF of the current OSPF
Conforms to RFC2328	Same as the RFC2328
RFC1583Compatibilit flag	Whether the RFC1583 or RFC2328 is adopted for the calculation of external routes. This policy is used in the selection of best ASBR and in the route comparison.
Support Tos	Supports Only TOS0.
Supports opaque LSA	Supports opaque-LSA.
Graceful-restart	GR Restart capability described in the RFC3623 Graceful Restart
Graceful-restart helper	GR Help capability described in the RFC3623 Graceful Restart
Router Type	OSPF device type, including normal, ABR, and ASBR

SPF Delay	Delay before the SPF calculation is invoked after the topology change is received
SPF-holdtime	Minimum holdtime between two SPF calculations
LsaGroupPacing	Parameter used for LSA pacing, checksum calculation, and aging interval
Incomming current DD exchange neighbors	Number of neighbors under interaction. The incoming neighbors are those entering the exstart status for the first time.
Outgoing current DD exchange neighbors	Number of neighbors under interaction. The outgoing neighbors are those exiting from the higher status to the exstart status for re-interaction.
Number of external LSA	Number of external LSAs stored in the database
External LSA Checksum Sum	Checksum sum of external LSAs stored in the database
Number of opaque LSA	Number of external LSAs stored in the database
Opaque LSA Checksum Sum	Checksum sum of external LSAs stored in the database
Number of non-default external LSA	Number of external LSAs with non-default routes
External LSA database limit	Limit of external LSA number
Exit database overflow state interval	Time of exiting the overflow status
Database overflow state	Whether the current OSPF process is in the overflow status
Number of LSA originated	Number of LSAs generated
Number of LSA received	Number of LSAs received
Log Neighbor Adjency Changes	Whether the record switch for neighbor status change is enabled
Number of areas attached to this router	Total number of areas on the devices
Area type	Area type, including normal, stub, and nssa
Number of interfaces in this area	Number of interfaces in this area
Number of fully adjacent neighbors in this area	Number of Full neighbors of the area
Number of fully adjacent virtual neighbors through	Number of Full neighbors with virtual connections in the area. It is effective only in the non-backbone default-type areas.

this area	
Area authentication	Authentication mode of the area
SPF algorithm last executed	Time from the previous SPF calculation to the current time
SPF algorithm executed times	Times of SPF calculations
Number of LSA	Total number of LSAs in this area
Checksum Sum	Checksum sum of the LSAs in the area
NSSATranslatorState	Whether to convert the NSSA LSA to External LSA. It is effective on the ABR OSPF process in the NSSA.
BFD enabled	Enables BFD for OSPF.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.61 show ip ospf border-routers

Use this command to display the OSPF internal routing table on the ABR/ASBR.

show ip ospf [*process-id***] border-mrouters**

Parameter Description

Parameter	Description
process-id	OSPF process ID

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command displays the OSPF internal routes from the local routing device to the ABR or ASBR. The OSPF internal routing table is different from the one displayed with the show ip route command. The OSPF internal routing table has the destination address of the router ID instead of the destination network.

Configuration Examples The following example displays the output of the **show ip ospf border-mrouters** command.

```
Ruijie# show ip ospf border-routers
OSPF internal Routing Table
Codes:i - Intra-area route, I - Inter-area route
i 1.1.1.1 [2] via 10.0.0.1, FastEthernet 0/1, ABR, ASBR, Area 0.0.0.1 select
```

The following table describes fields in the output.

Field	Description
Codes	Route type code, where “i” means intra-area routes, while “I” means inter-area routes.
I	Intra-area routes
1.1.1.1	Displays the OSPF ID of the border device.
[2]	Displays the cost to the border device.
via 10.0.0.1	Displays the next-hop gateway to the border device.
FastEthernet 0/1	Displays the interface to the border device.
ABR, ASBR	Displays the type of the border device, including ABR, ASBR, or both.
Area 0.0.0.1	Displays the area that learns the route.
Select	Indicates the currently selected optimal path when there are multiple paths to the ASBR.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.62 show ip ospf database

Use this command to display the OSPF link state database information. Use the **no** form of this command to restore the default setting.

Different formats of the command will display different LSA information.

show ip ospf [*process-id area-id*] **database** [**adv-router** *ip-address* | { **asbr-summary | external | network | nssa-external | opaque-area | opaque-as | opaque-link | router | summary** } [*link-state-id*] [{ **adv-router** *ip-address* | **self-originate** }] | **database-summary** | **max-age** | **self-originate | detail | brief**]

Parameter Description

Parameter	Description
area-id	(Optional) Displays the area ID.
adv-device	(Optional) Displays the LSA information generated by the specified advertising device.

link-state-id	(Optional) Displays the LSA information of the specified OSPF link state identifier.
self-originate	(Optional) Displays the LSA information generated by the device itself.
Max-age	(Optional) Displays the LSAs aged.
router	(Optional) Displays the OSPF device LSA information.
network	(Optional) Displays the OSPF network LSA information.
summary	(Optional) Displays the OSPF summary LSA information.
asbr-summary	(Optional) Displays the ASBR summary LSA information.
external	(Optional) Displays the OSPF external LSA information.
nssa-external	(Optional) Displays the category 7 OSPF external LSA information.
opaque-area	(Optional) Displays type 10 LSAs.
opaque-as	(Optional) Displays type 11 LSAs.
opaque-link	(Optional) Displays type 9 LSAs.
database-summary	(Optional) Displays the statistics of LSAs of the link state database.
detail	Displays detailed information of LSAs of the OSPF.
brief	Displays the brief information of the LSAs of the specified type.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide When the OSPF link state database is very large, you should display the information on the link state database by item. Proper use of commands may help OSPF troubleshooting.

Configuration Examples The following example displays the output of the **show ip ospf database** command.

```
Ruijie# show ip ospf database
OSPF Device with ID (1.1.1.1) (Process ID 1)
Device Link States (Area 0.0.0.0)
Link ID        ADV Device     Age  Seq#      CkSum  Link count
1.1.1.1        1.1.1.1        2    0x80000011 0x6f39 2
3.3.3.3        3.3.3.3        120  0x80000002 0x26ac 1
Network Link States (Area 0.0.0.0)
Link ID        ADV Device     Age  Seq#      CkSum
192.88.88.27    1.1.1.1        120  0x80000001 0x5366
Summary Link States (Area 0.0.0.0)
Link ID        ADV Device     Age  Seq#      CkSum  Route
10.0.0.0       1.1.1.1        2    0x80000003 0x350d 10.0.0.0/24
100.0.0.0      1.1.1.1        2    0x8000000c 0x1ecb 100.0.0.0/16
Device Link States (Area 0.0.0.1 [NSSA])
Link ID        ADV Device     Age  Seq#      CkSum  Link count
1.1.1.1        1.1.1.1        2    0x80000001 0x91a2 1
        Summary Link States (Area 0.0.0.1 [NSSA])
```

```
Link ID         ADV Device      Age  Seq#       CkSum  Route
100.0.0.0       1.1.1.1         2    0x80000001 0x52a4 100.0.0.0/16
192.88.88.0     1.1.1.1         2    0x80000001 0xbb2d 192.88.88.0/24
NSSA-external Link States (Area 0.0.0.1 [NSSA])
Link ID         ADV Device      Age  Seq#       CkSum  Route            Tag
20.0.0.0        1.1.1.1         1    0x80000001 0x033c E2 20.0.0.0/24    0
100.0.0.0       1.1.1.1         1    0x80000001 0x9469 E2 100.0.0.0/28   0
AS External Link States
Link ID         ADV Device      Age  Seq#       CkSum  Route            Tag
20.0.0.0        1.1.1.1         380  0x8000000a 0x7627 E2 20.0.0.0/24    0
100.0.0.0       1.1.1.1         620  0x8000000a 0x0854 E2 100.0.0.0/28   0
```

The following table describes the fields in the output of the **show ip ospf database** command.

Field	Description
OSPF Device with ID	Displays the Router ID.
Device Link States	Displays the device LSA information.
Net Link States	Displays the network LSA information.
Summary Net Link States	Displays the summary network LSA information.
NSSA-external Link States	Displays the type 7 autonomous external LSA information.
AS External Link States	Displays the type 5 autonomous external LSA information.
Link ID	Displays the Link ID.
ADV Device	Displays the ID of the device that advertises the LSAs.
Age	Displays the keepalive period of the LSA.
Seq#	Displays the sequence number of the LSA, which is used to check aged or duplicate LSAs.
Cksum	Displays the checksum of LSAs.
Link-Count	Displays the number of links in the device LSA information.
Route	Displays the device information included in the LSA.
Tag	Displays the tag of the LSA.

The following example displays the output the **show ip ospf database asbr-summary** command.

```
Ruijie# show ip ospf database asbr-summary
     OSPF Device with ID (1.1.1.35) (Process ID 1)
         ASBR-Summary Link States (Area 0.0.0.1)
LS age: 47
Options: 0x2 (*|-|-|-|-|-|E|-)
LS Type: ASBR-summary-LSA
Link State ID: 3.3.3.3 (AS Boundary Device address)
Advertising Device: 1.1.1.1
LS Seq Number: 80000001
```

```
Checksum: 0xbe8c
Length: 28
Network Mask: /0
     TOS: 0  Metric: 1
```

The following table describes the fields in the output of the **show ip ospf database asbr-summary** command.

Field	Description
OSPF Device with ID	Displays the router ID.
AS Summary Link States	Displays the summary LSA information in the AS.
LS age	Displays the keepalive period of the LSA.
Options	Option
LS Type	Displays the type of the LSA.
Link State ID	Displays the link ID of the LSA.
AdvertisingRouter	Displays the device advertising the LSA.
LS Seq Number	Displays the sequence number of the LSA.
Checksum	Displays the checksum of the LSAs.
Length	Displays the length (in bytes) of the LSA.
Network Mask	Displays the network mask of the route corresponding to the LSA.
TOS	TOS value, which can be only 0 now.
Metric	Displays the metric of the route corresponding to the LSA.

The following example displays the output of the **show ip ospf database external** command.

```
Ruijie# show ip ospf database external
     OSPF Device with ID (1.1.1.35) (Process ID 1)
         AS External Link States
LS age: 752
Options: 0x2 (*|-|-|-|-|-|E|-)
LS Type: AS-external-LSA
Link State ID: 20.0.0.0 (External Network Number)
Advertising Device: 1.1.1.1
LS Seq Number: 8000000a
Checksum: 0x7627
Length: 36
Network Mask: /24
     Metric Type: 2 (Larger than any link state path)
     TOS: 0
     Metric: 20
     Forward Address: 0.0.0.0
     External Route Tag: 0
```

The following table describes the fields in the output of the **show ip ospf database external**

command.

Field	Description
OSPF Device with ID	Displays the router ID.
Type-5 AS External Link States	Displays autonomous external LSA information.
LS age	Displays the keepalive period of the LSA.
Options	Option
LS Type	Displays the type of the LSA.
Link State ID	Displays the link ID of the LSA.
Advertising Router	Displays the device advertising the LSA
LS Seq Number	Displays the sequence number of the LSA.
Checksum	Displays the checksum of the LSAs.
Length	Displays the length (in bytes) of the LSA.
Network Mask	Displays the network mask of the route corresponding to the LSA.
Metric Type	Indicates the external link type.
TOS	TOS value, which can be 0 only now.
Metric	Displays the metric of the route corresponding to the LSA.
Forward Address	IP address through which traffic is forwarded to the destination network. If this address is 0.0.0.0, the data traffic will be forwarded to the device that generates the link state.
External Route Tag	External route tag. Each external route has a 32-byte route tag. The OSPF does not use the route tag by itself, but it will be used by other routing processes to redistribute OSPF routes.

The following example displays the output of the **show ip ospf database network** command:

```
Ruijie# show ip ospf database network
OSPF Router with ID (1.1.1.1) (Process ID 1)
Network Link States (Area 0.0.0.0)
LS age: 572
Options:0x2 (*|-|-|-|-|-|E|-)
LS Type:network-LSA
Link State ID:192.88.88.27 (address of Designated Router)
Advertising Router:1.1.1.1
LS Seq Number: 80000001
Checksum:0x5366
Length: 32
Network Mask: /24
Attached Router:1.1.1.1
Attached Router:3.3.3.3
```

The following table describes the fields in the output of the **show ip ospf database network**

command.

Field	Description
OSPF Router with ID	Displays the router ID corresponding to the follow-up information and the process ID corresponding to the OSPF.
Network LinStates	Displays the network LSA information.
LS age	Displays the keepalive period of the LSA.
Options	Option
LS Type	Displays the type of the LSA.
Link State ID	Displays the link ID of the LSA.
Advertising Device	Displays the device advertising the LSA.
LS Seq Number	Displays the sequence number of the LSA.
Checksum	Displays the checksum of LSAs.
Length	Displays the length (in bytes) of the LSA.
Network Mask	Displays the network mask of the network corresponding to the LSA.
Attached Router	Displays the device that is connected with the network.

The following example displays the output of the **show ip ospf database device** command:

```
Ruijie# show ip ospf database router
OSPF Router with ID (1.1.1.1) (Process ID 1)
Router Link States (Area 0.0.0.0)
LS age: 322
Options:0x2 (*|-|-|-|-|-|E|-)
Flags:0x3 :ABR ASBR
LS Type:router-LSA
Link State ID:1.1.1.1
Advertising Router:1.1.1.1
LS Seq Number: 80000012
Checksum:0x6d3a
Length: 48
Number of Links: 2
Link connected to:Stub Network
(Link ID) Network/subnet number: 100.0.1.1
(Link Data) Network Mask: 255.255.255.255
Number of TOS metrics: 0
TOS 0 Metric: 0
```

The following table describes the fields in the output of the **show ip ospf database device** command.

Field	Description
OSPF Device with ID	Displays the router ID.

Device Link States	Displays the device LSA information.
LS age	Displays the keepalive period of the LSA.
Options	Option
Flag	Flag
LS Type	Displays the type of the LSA.
Link State ID	Displays the link ID of the LSA.
Advertising Router	Displays the device advertising the LSA.
LS Seq Number	Displays the sequence number of the LSA.
Checksum	Displays the checksum of LSAs.
Length	Displays the length (in bytes) of the LSA.
Number of Links	Displays the number of links associated with the device.
Link connected to	Displays what the link is connected to and the network type.
(Link ID)	Link identifier
(Link Data)	Link data
Number of TOS metrics	TOS value, supporting TOS0 only
TOS 0 Metrics	TOS0 metric

The following example displays the output of the **show ip ospf database summary** command:

```
Ruijie# show ip ospf database summary
     OSPF Device with ID (1.1.1.1) (Process ID 1)
         Summary Link States (Area 0.0.0.0)
LS age: 499
Options: 0x2 (*|-|-|-|-|-|E|-)
LS Type: summary-LSA
Link State ID: 10.0.0.0 (summary Network Number)
Advertising Device: 1.1.1.1
LS Seq Number: 80000004
Checksum: 0x330e
Length: 28
Network Mask: /24
     TOS: 0  Metric: 11
```

The following table describes the fields in the output of the **show ip ospf database summary** command.

Field	Description
OSPF Router with ID	Displays the router ID.
Summary Net Link States	Displays the summary network LSA information.
LS age	Displays the keepalive period of the LSA.
Options	Option
LS Type	Displays the type of the LSA.
Link State ID	Displays the link ID of the LSA.
Advertising Router	Displays the device advertising the LSA.
LS Seq Number	Displays the sequence number of the LSA.
Checksum	Displays the checksum of LSAs.
Length	Displays the length (in bytes) of the LSA.
Network Mask	Displays the network mask of the route corresponding to the LSA.
TOS	TOS value, supporting only 0 now
Metric	Displays the metric of the route corresponding to the LSA.

The following example displays the output of the **show ip ospf database nssa-external** command:

```
Ruijie# show ip ospf database nssa-external
     OSPF Device with ID (1.1.1.1) (Process ID 1)
NSSA-external Link States (Area 0.0.0.1 [NSSA])
LS age: 1
Options: 0x0 (*|-|-|-|-|-|-|-)
LS Type: AS-NSSA-LSA
Link State ID: 20.0.0.0 (External Network Number For NSSA)
Advertising Device: 1.1.1.1
LS Seq Number: 80000001
Checksum: 0x033c
Length: 36
Network Mask: /24
     Metric Type: 2 (Larger than any link state path)
     TOS: 0
     Metric: 20
```

```
    NSSA: Forward Address: 100.0.2.1
    External Route Tag: 0
```

The following table describes the fields in the output of the **show ip ospf database nssa-external** command.

Field	Description
OSPF Router with ID	Displays the router ID.
NSSA-external Link States	Displays the type 7 autonomous external LSA information.
LS age	Displays the keepalive period of the LSA.
Options	Option
LS Type	Displays the type of the LSA.
Link State ID	Displays the link ID of the LSA.
Advertising Router	Displays the device advertising the LSA.
LS Seq Number	Displays the sequential number of the LSA.
Checksum	Displays the checksum of the LSAs.
Length	Displays the length (in bytes) of the LSA.
Network Mask	Displays the network mask of the route corresponding to the LSA.
Metric Type	Displays the metric type.
TOS	TOS value, which can be 0 only now.
Metric	Displays the metric of the route corresponding to the LSA.
NSSA:Forward Address	IP address through which traffic is forwarded to the destination network. If this address is 0.0.0.0, the data traffic will be forwarded to the device that generates the link state.
External Route Tag	External route tag. Each external route has a 32-byte route tag. The OSPF does not use the route tag by itself, but it will be used in redistributing OSPF routes by other routing process.

The following example displays the output of the **show ip ospf database external** command:

```
Ruijie# show ip ospf database external
```

```
     OSPF Device with ID (1.1.1.1) (Process ID 1)
        AS External Link States
LS age: 1290
Options: 0x2 (*|-|-|-|-|-|E|-)
LS Type: AS-external-LSA
Link State ID: 20.0.0.0 (External Network Number)
Advertising Device: 1.1.1.1
LS Seq Number: 8000000a
Checksum: 0x7627
Length: 36
Network Mask: /24
     Metric Type: 2 (Larger than any link state path)
     TOS: 0
     Metric: 20
     Forward Address: 0.0.0.0
     External Route Tag: 0
```

The following table describes the fields in the output of the **show ip ospf database external** command.

Field	Description
OSPF Device with ID	Displays the router ID.
Type-7 AS External Link States	Displays the type 7 autonomous external LSA information.
LS age	Displays the keepalive period of the LSA.
Options	Option
LS Type	Displays the type of the LSA.
Link State ID	Displays the link ID of the LSA.
Advertising Router	Displays the device advertising the LSA.
LS Seq Number	Displays the sequence number of the LSA.
Checksum	Displays the checksum of the LSAs.
Length	Displays the length (in bytes) of the LSA.
Network Mask	Displays the network mask of the route corresponding to the LSA.
Metric Type	Displays the metric type.
TOS	TOS value, which can be 0 only now.

Metric	Displays the metric of the route corresponding to the LSA.
Forward Address	IP address through which traffic is forwarded to the destination network. If this address is 0.0.0.0, the data traffic will be forwarded to the device that generates the link state.
External Route Tag	External route tag. Each external route has a 32-byte route tag. The OSPF does not use the route tag by itself, but it will be used in redistributing OSPF routes by other routing process.

The following example displays the output of the **show ip ospf database database-summary** command:

```
Ruijie# show ip ospf database database-summary
OSPF process 1:
Device Link States      : 4
Network Link States     : 2
Summary Link States     : 4
ASBR-Summary Link States : 0
AS External Link States  : 4
NSSA-external Link States: 2
```

The following table describes the fields in the output of the command **show ip ospf database database-summary**.

Field	Description
OSPF Process	OSPF process ID
Router Link	Number of device LSAs in the area
Network Link	Number of network LSAs in the area
Summary Link	Number of summary LSAs in the area
ASBR-Summary Link	Number of ASBR summary LSAs in the area
AS External Link	Number of NSSA LSAs in the area
NSSA-external Link	Number of NSSA LSAs in the area

Related Commands

Command	Description
N/A	N/A

Platform N/A

Description

2.63 show ip ospf interface

Use this command to display the OSPF-associated interface information.

show ip ospf [*process-id* **] interface [** *interface-type interface-number* **| brief]**

Parameter Description

Parameter	Description
process-id	OSPF process ID
interface-type	(Optional) type of the specified interface
interface-number	(Optional) number of the specified interface
brief	Displays the summary of the interface.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command displays the OSPF information on the interface.

Configuration Examples The following example displays the output of the **show ip ospf interface fastEthernet** *0/1* command:

```
Ruijie# show ip ospf interface fastEthernet0/1
FastEthernet 0/1 is up, line protocol is up
Internet Address 192.88.88.27/24, Ifindex 4, Area 0.0.0.0, MTU 1500
Matching network config: 192.88.88.0/24
Process ID 1, Router ID 1.1.1.1, Network Type BROADCAST, Cost: 1
Transmit Delay is 1 sec, State DR, Priority 1,BFD enabled
Designated Router (ID) 1.1.1.1, Interface Address 192.88.88.27
Backup Designated Router (ID) 3.3.3.3, Interface Address 192.88.88.72
Timer intervals configured,Hello 10,Dead 40,Wait 40,Retransmit 5
Hello due in 00:00:03
Neighbor Count is 1, Adjacent neighbor count is 1
Crypt Sequence Number is 70784
Hello received 1786 sent 1787, DD received 13 sent 8
LS-Req received 2 sent 2, LS-Upd received 29 sent 53
LS-Ack received 46 sent 23, Discarded 1
```

The following table describes the fields in the output of the **show ip ospf interface serial***1/0* command.

Field	Description
FastEthernet 0/1 State	State of the network interface; UP means normal working and Down means faults.
Internet Address	Interface IP address

Area	OSPF area of the interface
MTU	Corresponding MTU
Matching network config	Network area configured for the corresponding OSPF
Process ID	Corresponding process ID
Router ID	OSPF router id
Network Type	OSPF network type
Cost	OSPF interface cost
Transmit Delay is	OSPF interface transmit delay
State	DR/BDR state ID
Priority	Priority of the interface
Designated Router(ID)	DR ID of the interface
DR's Interface address	Address of the DR of the interface
Backup designated device(ID)	Router ID of the BRD of the interface
BDR's Interface address	Address of the BDR of the interface
Time intervals configured	Hello, Dead, Wait, and Retransmit intervals of the interface
Hello due in	Time when the previous Hello is sent
Neighbor count	Total number of neighbors
Adjacent neighbor count	Number of Full neighbors
Crypt Sequence Number	The corresponding md5 authentication number of the interface
Hello received send	Statistics on the Hello packets sent and received
DD received send	Statistics on the DD packets sent and received
LS-Req received send	Statistics on the LS request packets sent and received
LS-Upd received send	Statistics on the LS update packets sent and received
LS-Ack received send	Statistics on the LS response packets sent and received
Discard	Statistics on the discarded OSPF packets
BFD enabled	Enables BFD for OSPF.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.64 show ip ospf ispf

Use this command to display the ISPF calculation count in the OSPF area.

show ip ospf [*process-id*] **ispf**

Parameter Description

Parameter	Description
process-id	OSPF process ID

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command displays the ISPF calculation count in the OSPF area within the last 30 minutes and total ISPF calculation count by now.

Configuration Examples The following displays the ISPF calculation count in the OSPF area.

```
Ruijie# show ip ospf 1 ispf

OSPF process 1:
Area_id     30min_counts   Total_counts
0           32             1235
1           6              356
```

Field Description:

Field	Description
Area_id	OSPF area ID.
30min_counts	ISPF calculation count in the OSPF area within the last 30 minutes.
Total_counts	Total count of ISPF calculation.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.65 show ip ospf neighbor

Use this command to display the OSPF neighbor list.

show ip ospf [*process-id*] **neighbor**[**statistics** | { [*interface-type interface-number*] | [*neighbor-id*] | [**detail**] }]

Parameter Description

Parameter	Description
detail	(Optional) Displays the neighbor details.
interface-type *interface-number*	(Optional) Displays the neighbor information of the specified interface
neighbor-id	(Optional) Displays the information of the specified neighbor
statistics	(Optional) Displays the neighbor statistics.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command displays neighbor information usually used to check whether the OSPF is running normally.

Configuration Examples The following example displays the output of the **show ip ospf neighbor** command.

```
Ruijie# show ip ospf neighbor
OSPF process 1, 1 Neighbors, 1 is Full:
Neighbor ID   Pri   State    BFD State   Dead Time   Address       Interface
3.3.3.3       1     Full/BDR  Up         00:00:32    192.88.88.72
FastEthernet 0/1

Ruijie# show ip ospf neighbor detail
Neighbor 3.3.3.3, interface address 192.88.88.72
In the area 0.0.0.0 via interface FastEthernet 0/1
Neighbor priority is 1, State is Full, 11 state changes
DR is 192.88.88.27, BDR is 192.88.88.72
Options is 0x52 (*|O|-|EA|-|-|E|-)
Dead timer due in 00:00:32
Neighbor is up for 05:11:27
Database Summary List 0
Link State Request List 0
Link State Retransmission List 0
Crypt Sequence Number is 0
Thread Inactivity Timer on
Thread Database Description Retransmission off
Thread Link State Request Retransmission off
Thread Link State Update Retransmission off
Thread Poll Timer on
Graceful-restart helper disabled
BFD session state up
```

The following table describes the fields in the output of the **show ip ospf neighbor** command.

Field	Description
Neighbor ID	Neighbor ID
Pri	Neighbor priority (for selection of DR)
State	Neighbor status
Dead Time	Remaining time for the neighbor to enter the Dead status
Address	Interface address of the neighbor
Interface	Interface of the neighbor
interface address	Interface address of the neighbor device
In the area	Displays the area that learns the neighbor.
via interface	Displays the interface that learns the neighbor
Neighbor priority	Priority of the neighbor OSPF
State	OSPF neighbor connection state. FULL means the stable state; DR indicates that the neighbor is the designated device; BDR indicates that the neighbor is the backup designated device; DROTHER indicates that the neighbor is not a DR/BDR. Point-to-point network type has no DR or DBR.
State changes times	Times of state changes
Dead Time	Dead time of the neighbor
DR	Interface address of the DR elected by the neighbor device (that is, the DR field of the Hello packet)
BDR	Interface address of the BDR elected by the neighbor device (that is, the BDR field of the Hello packet)
Options	Hello packet E-bit option, where 0 indicates that the area is a STUB area; 2 indicates that the area is not a STUB area.
Dead timer due in	Dead time of the neighbor device
Neighbor up time	Period from when the device is discovered till now
Database Summary List	Statistics on the neighbor DD packets
LinkState Request List	Statistics on the neighbor LS request packets
LinkState Retransmission List	Statistics on the neighbor re-transmit packets
Crypt Sequence Number	Area MD5 authentication code
Thread Inactivity Timer	Status of invalid neighbor timer
Thread Database Description Retransmission	Status of DD packet timer of the interface

ThreadLinkState Request Retransmission	Status of LS request packet timer of the interface
ThreadLinkState Update Retransmission	Status of LS update packet timer of the interface
Thread Poll Timer	Poll Timer start status of the static neighbor
Graceful-restart helper	Whether it is able to function as the GR Helper of a specified neighbor

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.66 show ip ospf route

Use this command to display the OSPF routes.

show ip ospf [*process-id*] **route** [**count**]

Parameter Description

Parameter	Description
process-id	OSPF process ID. All OSPF routes will be displayed without an ID specified.
count	Statistics of various OSPF routes

Defaults N/A

Command Mode Privileged mode

Usage Guide This command displays the OSPF routing information. The count option displays the OSPF routing statistics.

Configuration Examples The following example displays the output of the **show ip ospf route** command.

```
OSPF process 1:
Codes: C - connected, D - Discard , O - OSPF,
IA - OSPF inter area  N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
type 2
E1 - OSPF external type 1, E2 - OSPF external type 2
E2 100.0.0.0/24 [1/20] via 192.88.88.126, FastEthernet 0/1
```

```
C  192.88.88.0/24 [1] is directly connected,FastEthernet 0/1,Area 0.0.0.1
```

The following table describes the fields in the output of the **show ip ospf route** command.

Field	Description
codes	Route type and corresponding abbreviation and description
100.0.0.0/24	Route prefix
[1]	Route cost
via	Route next hop and interface

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.67 show ip ospf spf

Use this command to display the routing count in the OSPF area.

show ip ospf [*process-id*] **spf**

Parameter Description

Parameter	Description
process-id	OSPF process ID

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command displays the routing counts within the latest 30 minutes in the OSPF area and current routing total counts.

Configuration Examples The following example displays the output of the **show ip ospf [***process-id***] spf** command:

```
Ruijie# show ip ospf 1 spf

OSPF process 1:
Area_id     30min_counts   Total_counts
0               32             1235
1               6               356
```

The following table describes the fields in the output of the **show ip ospf [***process-id***] spf** command.

Field	Description
Area_id	OSPF area ID

30min_counts	OSPF routing counts within the latest 30 minutes
Total_counts	Total counts of the OSPF routing till now

Related Commands

Command	Description
show ip ospf	Displays the OSPF summary.

Platform Description N/A

2.68 show ip ospf summary-address

Use this command to display the converged route of all redistributed routes.

show ip ospf [*process-id***] summary-address**

Parameter Description

Parameter	Description
process-id	ID of the OSPF process. All OSPF routing processes will be displayed if this parameter is not configured.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is valid only on the NSSA ABR, and displays only the routes with local aggregation operations.

Configuration Examples The following example displays the output of the **show ip ospf summary-address** command:

```
Ruijie# show ip ospf summary-address
Summary Address Summary Mask Advertise Status Aggregated subnets
----------- ----------- ------------ ----------- -----------
202.101.0.0    255.255.0.0    advertise       Inactive 0
```

Field	Description
Summary Address	IP address to be aggregated
Summary Mask	Mask to be aggregated
Advertise	Whether to advertise the aggregated route
Status	Whether the aggregation range takes effect
Aggregated subnets	Number of external routes included in the aggregation range

Related Commands

Command	Description

N/A	N/A

Platform Description N/A

2.69 show ip ospf topology

Use this command to display topology information for OSPF SPF calculation.

show ip ospf [*process-id area-id*] **topology** [**adv-router** *ip-address* | **self-originate**]

Parameter Description

Parameter	Description
process-id	OSPF process ID.
area-id	Displayed area ID
topology	Displays a specified OSPF process and topology information summary of an area.
adv-router	Displays topology information of a specified device. This specified device must be a directly connected neighbor of the current device.
self-originate	Displays topology information of the current device.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command helps users to understand OSPF SPF calculation topology information and troubleshoot faults caused by topology planning. If the user enables fast reroute calculation, this command displays information related to fast reroute calculation.

Configuration Examples The following example displays the result of the show **ip ospf topology** command:

```
Ruijie# show ip ospf topology
OSPF Router with ID (1.1.1.1) (Process ID 1)
Router Topology States (Area 0.0.0.0)
+1.1.1.1
  +2.2.2.2
    +4.4.4.4
  +3.3.3.3
    +4.4.4.4

+2.2.2.2
  +1.1.1.1
    +3.3.3.3
  +4.4.4.4
    +3.3.3.3
```

```
+3.3.3.3
  +1.1.1.1
    +2.2.2.2
  +4.4.4.4
+2.2.2.2
```

The following example displays the result of the **show ip ospf topology self-originate** command:

```
Ruijie# show ip ospf topology self-originate
OSPF Router with ID (1.1.1.1) (Process ID 1)
Router Topology States (Area 0.0.0.0)
1.1.1.1
  Self to Destination Metric: 0
Parent Node: -
Child Node:2.2.2.2
  Primary next-hop: -
  Backup next-hop: -
  Backup Neighbor: -

2.2.2.2
  Self to Destination Metric: 1
Parent Node: 1.1.1.1
Child Node:-
  Primary next-hop: FastEthernet 0/1 via 10.0.0.1
  Backup next-hop: FastEthernet 0/2 via 10.0.1.1
  Backup Neighbor: 2.2.2.2
Neighbor to Destination Metric: 0
Neighbor to Self Metric: 10
Neighbor to Primary Neighbor: 0
Self to Neighbor Metric: 1
```

The description of every field displayed by **show ip ospf topology self-originate** is as follows:

Field	Description
Self to Destination Metric	Metric from the root node to the current destination node
Parent Node	Parent node of the current destination node
Child Node	Chile node of the current destination node
Primary next-hop	Primary next hop for reaching the current the destination node
Backup next-hop	Backup next hop for reaching the current the destination node
Backup Neighbor	Backup neighbor for reaching the current the destination node
Neighbor to Destination Metric	Metric from the backup neighbor to the current destination node
Neighbor to Self Metric	Metric from the backup neighbor to the root node

Neighbor to Primary Neighbor	Metric from the backup neighbor to the primary neighbor
Self to Neighbor Metric	Metric from the root node to the backup neighbor

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.70 show ip ospf virtual-links

Use this command to display the OSPF virtual link information.

show ip ospf [*process-id*] **virtual-links** [*ip-address*]

Parameter Description

Parameter	Description
process-id	ID of the OSPF process. All OSPF routing processes will be displayed if this parameter is not configured.
ip-address	Associated ID of a virtual link neighbor

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide If no virtual link is configured, the command displays the neighbor status and other related information. The show ip ospf neighbor command does not display the neighbor of the virtual link.

Configuration Examples The following is the output of the **show ip ospf virtual-links** command:

```
Ruijie# show ip ospf virtual-links
Virtual Link VLINK0 to device 1.1.1.1 is up
Transit area 0.0.0.1 via interface FastEthernet 0/1
Local address 10.0.0.37/32
Remote address 10.0.0.27/32
Transmit Delay is 1 sec, State Point-To-Point,
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
Hello due in 00:00:05
Adjacency state Full
```

The following table describes the fields in the output.

Field	Description

Virtual Link VLINK0 to router	Displays the virtual link neighbors and their status.
Virtual Link State	Displays the virtual link state.
Transit area	Displays the transit area of the virtual link.
via interface	Displays the associated interface of the virtual link.
Local address	Local interface address
Remote Address	Peer interface address
Transmit Delay	Displays the transmit delay of the virtual link.
State	Interface state
Time intervals configured	Hello, Dead, Wait, and Retransmit interval of the interface
Adjacency State	Neighbor state, where FULL means the stable state

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.71 summary-address

Use this command to configure the aggregate route out of the OSPF routing domain. Use the **no** form of this command to restore the remove the aggregate route.

summary-address *ip-address net-mask* [**not-advertise** | **tag** *value* | **cost** *cost*]

no summary-address *ip-address net-mask* [**not-advertise** | **tag** | **cost**]

Parameter Description

Parameter	Description
ip address	IP address of the aggregate route
net-mask	Network mask of the aggregate route
not-advertise	Does not advertise the aggregate route. If the parameter is not configured, the aggregate route is advertised.
tag *value*	Sets the tag value of an aggregate route. The range is from 0 to 4,294,967,295.
cost *cost*	Cost value of the aggregate route. The range is from 0 to 16,777,214.

Defaults No aggregate route is configured by default.

Command Mode Routing process configuration mode

Usage Guide When routes are redistributed by another routing process into the OSPF routing process, every route is advertised to the OSPF-enabled device separately in external LSAs. If the incoming routes are continuous addresses, the autonomous border device can advertise only one aggregate route, reducing the scale of routing table greatly.
Unlike the **area range** command, the area range command aggregates inter-OSPF-area routes, while the summary-address command aggregates external routes of the OSPF routing domain.
For the NSSA, the **summary-address** command is valid only on the NSSA ABR now, and aggregates only redistributed routes.

Configuration Examples The following example generates an external aggregate route 100.100.0.0/16.

```
Ruijie(config)# router ospf20
Ruijie(config-router)# summary-address100.100.0.0 255.255.0.0
Ruijie(config-router)# redistribute static subnets
Ruijie(config-router)# network200.2.2.0 0.0.0.255 area 1
Ruijie(config-router)# network172.16.24.0 0.0.0.255area 0
Ruijie(config-router)# area1nssa
```

Related Commands

Command	Description
area-range	Configures route convergence on the OSPF area border device.
redistribute	Redistributes routes of other routing processes.

Platform Description N/A

2.72 timers lsa arrival

Use this command to configure the time delay for the same LSA received. Use the **no** form of this command to restore the default setting.
timers lsa arrival *arrival-time*
no timers lsa arrival

Parameter Description

Parameter	Description
arrival-time	Configures the time delay when receiving the same LSA. The range is from 0 to 600000 in the unit of milliseconds.

Defaults The default is 1000.

Command Mode Routing process configuration mode

Usage Guide No action is done when the same LSA is received within the specified time.

Configuration Examples The following example configures the time delay for the same LSA as 2seconds.

```
Ruijie(config)# routerospf1
Ruijie(config-router)# timers arrival-time 2000
```

Related Commands

Command	Description
show ip ospf	Displays the OSPF information.

Platform Description N/A

2.73 timers pacing lsa-group

Use this command to configure the LSA grouping and then refresh the whole groups as well as the update interval for the aged link state. Use the **no** form of this command to restore the default setting.

timers pacing lsa-group *seconds*

no timers pacing lsa-group

Parameter Description

Parameter	Description
seconds	Parameter used for LSA pacing, checksum calculation, and aging interval. The range is from 10 to1800 in the unit of seconds.

Defaults The default is 30.

Command Mode Routing process configuration mode

Usage Guide Each LSA has its own update and aging time (LSA age). If you update and age LSAs separately, many CPU resources will be consumed. To effectively use CPU resources, you can update LSAs of a device in batches.

You can use this command to modify the value of seconds, whose default value is 240 seconds. This parameter needs not to be adjusted often. The optimal group pacing interval is inversely proportional to the number of LSAs that need to be calculated. For example, if you have approximately 10000 LSAs in the database, decreasing the pacing interval would be better. If the switch has a small database (40 to 100 LSAs), increasing the pacing interval to 10 to 20 minutes might be better.

Configuration Examples The following example configures the pacing time as 120 seconds.

```
Ruijie(config)# deviceospf 20
Ruijie (config-router)# timers paing lsa-group 120
```

Related Commands

Command	Description
show ip ospf	Displays the OSPF information.

Platform Description N/A

2.74 timers pacing lsa-transmit

Use this command to transmit the LSA grouping updating. Use the **no** form of this command to restore the default setting.

timers pacing lsa-transmit *transmit-time transmit-count*

no timers pacing lsa-transmit

Parameter Description

Parameter	Description
transmit-time	Configures the interval of sending the LSA grouping. The range is from 10 to 1000.
transmit-count	Configures the number of LS-UPD packets per group. The range is from 1 to 200.

Defaults The default configurations are as follows:
Transmit-time: 40 milliseconds.
Transmit-count: 10

Command Mode Routing process configuration mode

Usage Guide If there are a large number of LSAs and the load on the system is heavy, you can properly use the **transmit-time** and **transmit-count** to inhibit the flooding LS-UPD packet number in the network.
If the CPU and network bandwidth loads are not too much, reduce **transimi-time** and increase **transimit-count** to quicken the environment convergence.

Configuration Examples The following example sets the interval of sending the LS-UPD packets as 50ms, the packets number as 20.

```
Ruijie(config)# routerospf1
Ruijie(config-router)# timers pacing lsa-transmit 50 20
```

Related Commands

Command	Description
show ip ospf	Displays the OSPF process information, including the router ID.

Platform N/A

Description

2.75 timers spf

Use this command to configure the delay for SPF calculation after the OSPF receives the topology change as well as the interval between two SPF calculations. Use the **no** form of this command to restore the default setting.

timers spf *spf-delay spf-holdtime*

no timers spf

Parameter Description

Parameter	Description
spf-delay	Defines the SPF calculation waiting period in seconds. The range is from 0 to 2147483647.After receiving the topology change, the OSPF routing process must wait for the specified period to start the SPF calculation.
spf-holdtime	Defines the interval between two SPF calculations in seconds. The range is from 0 to 2147483647.When the waiting time is up but the interval between two calculations is still elapsing, the SPF calculation cannot start.

Defaults

For the RGOS not supporting the timers throttle spf command, the default values are as follows:
spf-delay: 5seconds;
spf-holdtime: 10 seconds.
For the RGOS supporting the timers throttle spf command, by default, the timers spf command takes no effect. Spf-delay depends on the default configuration of the timers throttle spf command.

Command Mode

Routing process configuration mode

Usage Guide

Smaller values of *spf-delay* and *spf-holdtime* mean that OSPF adapts to the topology change faster, and the network convergence period is shorter, but this will occupy more CPU of the router.

⚠ The configurations of the **timers spf command** and the timers throttle spf command may overwrite each other.

Configuration Examples

The following example configures the delay and holdover period of the OSPF as 3 and 9 seconds respectively.

```
Ruijie(config)# deviceospf20
Ruijie(config-router)# timersspf 3 9
```

Related Commands

Command	Description
show ip ospf	Displays the configuration information of the

	ospf.
timers throttle spf	Configures the exponential back off delay for SPF calculation. The command is recommended to replace the timers spf command because it is more powerful.

Platform Description N/A

2.76 timers throttle lsa all

Use this command to configure the exponential back off algorithm for the LSA. Use the **no** form of this command to restore the default setting.

timers throttle lsa all *delay-time hold-time max-wait-time*

no timers throttle lsa all

Parameter Description

Parameter	Description
delay-time	Configures the time delay of generating the LSA first. The range is from 1 to 600000.
hold-time	Configures the minimum interval of refreshing the LSA between the first time and second time. The range is from 0 to 600000.
max-wait-time	Configures the maximum interval of successive refreshing the LSA, which determines whether the LSA is refreshed successively. The range is from 0 to 600000

Defaults The default configurations are as follows:

Delay-time: 0 millisecond,

Hold-time: 5000 milliseconds,

Max-wait-time: 5000 milliseconds.

Command Mode Routing process configuration mode

Usage Guide If high convergence performance is required for the link change, the value of delay-time can be relatively small. if you expect to reduce the CPU consumption, increase appropriately several values.

⚠ The value of hold-time cannot be smaller than that of delay-time, and the value of max-wait-time cannot be smaller than that of hold-time.

Configuration Examples The following example configures the first delay as 10ms, hold-time as 1second and the longest delay as 5seconds.

```
Ruijie(config)# routerospf1
```

```
Ruijie(config-router)# timers throttle lsa all 10 1000 5000
```

Related Commands

Command	Description
show ip ospf	Displays the configuration information of the ospf

Platform Description N/A

2.77 timers throttle route

Use this command to configure the delay time of route calculation on receiving the ASBR summary LSA and the external summary LSA. Use the **no** form of this command to restore the default setting.
timers throttle route { **inter-area** *ia-delay* | **ase** *ase-delay* }
no timers throttle route { **inter-area** | **ase** }

Parameter Description

Parameter	Description
inter-area	Calculates the inter area routes.
ia-delay	Sets the delay time of the inter-area route calculation, in the range from 0 to 600,000 in the unit of milliseconds. On receiving the ASBR summary LSA, the router will not calculate the inter-area routes until the ia-delay time runs out.
ase	Calculates the external routes.
ase-delay	Defines the delay time of the external route calculation, in the range from 0 to 600,000 in the unit of milliseconds. On receiving the external summary LSA, the router will not calculate the external routes until the ase-delay time runs out.

Defaults The default values are as follows:
ia-delay: 0,
ase-delay: 0,

Command Mode Routing process configuration mode

Usage Guide The default setting is recommended if the network needs to be fast converged. For the instable network where multiple inter-area and external routes exist, if you want to optimize the route calculation and save the CPU resources, increase the delay time.

Configuration Examples The following example sets the .delay time of the inter-area route calculation to one second.

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# timers throttle route inter-area 1000
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.78 timers throttle spf

Use this command to configure the topology change information for OSPF, including the delay for SPF calculation as well as the interval between two SPF calculations in routing process configuration mode. Use the **no** form of this command to restore the default setting.

timers throttle spf *spf-delay spf-holdtime spf-max-waittime*

no timers throttle spf

Parameter Description

Parameter	Description
spf-delay	Defines the SPF calculation waiting period, in the unit of milliseconds, in the range from 0 to 600,000. After receiving the topology change, the OSPF routing process must wait for the specified period to start the SPF calculation.
spf-holdtime	Defines the interval between two SPF calculations in seconds in the range from 0 to 600,000.
spf-max-waittime	Defines the maximum interval between two SPF calculations, in milliseconds in the range from 0 to 60,0000.

Defaults The default configurations are as follows:
spf-delay: 1000ms;
spf-holdtime: 5000ms;
spf-max-waittime: 10000ms.

Command Mode Routing process configuration mode

Usage Guide The spf-delay parameter indicates the delay time of the topology change to the SPF calculation.
The spf-holdtime parameter indicates the minimum interval between two SPF calculations. Then, the interval of the consecutive SPF calculations is at least twice as the last interval until it reaches to spf-max-waittime. If the interval between two SPF calculations has exceeded the required value, the SPF calculation will restart from spf-holdtime.
Smaller spf-delay and spf-holdtime values can make the topology converge faster. A greater spf-max-waittime value can reduce the system resource consumption of SPF calculation. Those configurations can be flexibly adjusted according to the actual stability of the network topology.
Compared with the timers spf command, this command is more flexible. It speeds up the SPF

calculation convergence, and reduces the system resource consumption of SPF calculation due to the topology change. To this end, the timers throttle spf command is recommended.

The value of spf-holdtime cannot be smaller than the value of spf-delay, or the value ofspf-holdtime will be set to be equal to the value of spf-delay;
The value of spf-max-waitime cannot be smaller than the value of spf-holdtime, or the value of spf-max-waittime will be set to be equal to the value of spf-holdtime automatically;
The configurations of the timers spf command and the timers throttle spf command may overwrite each other.
If both the timers spf command and the timers throttle spf command are not configured, the default value of the timers throttle spf command is used.

Configuration Examples

The following example configures the delay and holdtime and the maximum time interval of the OSPF as 5ms, 1000ms and 90000ms respectively. If the topology changes consecutively, the SPF calculation intervals are: 5ms, 1second, 3 seconds, 7 seconds, 15 seconds, 31 seconds, 63 seconds, 89 seconds, 179 seconds, 179+90seconds…

```
Ruijie(config)# routerospf20
Ruijie(config-router)# timersspf 5 1000 90000
```

Related Commands

Command	Description
show ip ospf	Displays the configuration information of OSPF
timers spf	Configures the SPF calculation delay. This command is supported in versions earlier than RGOS 10.4. It is recommended to replace the timers spf command with the timers throttle spf command.

Platform Description

N/A

2.79 two-way-maintain

Use this command to enable the OSPF two-way-maintain function. Use the **no** form of this command to disable this function.

two-way-maintain

no two-way-maintain

Parameter Description

Parameter	Description
N/A	N/A

Defaults

This function is enabled by default.

Command Mode Routing process configuration mode

Usage Guide In the large-scale network, partial packets delay or dropped may exist due to much CPU and memory are occupied caused by lots of packet transmission. If the Hello packets are handled over dead-interval, the corresponding adjacency will be disconnected. In this case, you can enable the two-way-maintain function for the packets such as DD, LSU, LSR and LSAck packets from a neighbor in the network (except for the Hello packets), avoiding the neighbor invalidation caused by delayed or dropped Hello packets.

Configuration Examples The following example disables the OSPF two-way-maintain function.

```
Ruijie(config)# routerospf1
Ruijie(config-router)# notwo-way-maintain
```

Related Commands

Command	Description
show ip ospf	Displays the configuration information of the OSPF

Platform Description N/A

3 OSPFv3 Commands

3.1 area authentication

Use this command to configure OSPFv3 area authentication. Use the **no** form of this command to restore the default setting.

area *area-id* **authentication ipsec spi** *spi* [**md5** [**string-key**] **| sha1**] [**0 | 7**] *key*

no area *area-id* **authentication**

Parameter Description

Parameter	Description
area-id	Specifies an area ID. It can be an integer or the prefix of an IPv4 address.
spi	Specifies a security parameter index, in the range from 256 to 4294967295.
md5	Specifies a message digest 5 (MD5) authentication mode.
string-key	Indicates that MD5 authentication key supports special characters.
sha1	Specifies a secure hash algorithm 1 (SHA1) authentication mode.
0	Indicates that a key is displayed in a plain-text format.
7	Indicates that a key is displayed in a cipher-text format.
key	Specifies an authentication key.

Defaults Authentication is not performed by default.

Command Mode Routing process configuration mode

Usage Guide RGOS supports three authentication modes:

- null authentication mode, which is configured when authentication is not needed
- MD5 authentication mode
- SHA1 authentication mode

If OSPFv3 area authentication is configured, the configuration takes effect on all interfaces (except for those of virtual links) in the area. Interface authentication configuration, however, takes precedence over area authentication configuration.

Configuration Examples The following example specifies MD5 authentication for area 1 where OSPFv3 routing processes reside, and sets the authentication password to aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa.

```
Ruijie(config-router)# area 1 authentication ipsec spi 300 md5
aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa
Ruijie(config-router)#area 0 authentication ipsec spi 606 md5 string-key ruijie@123
Ruijie(config-router)#show this
```

```
Building configuration...
!
 graceful-restart
 area 0 authentication ipsec spi 606 md5 string-key ruijie@123
 area 1 authentication ipsec spi 300 md5 aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa
!
end
Ruijie(config-router)#
```

Related Commands

Command	Description
ipv6 ospf authentication	Specifies interface authentication.
area virtual-link authentication	Specifies virtual link authentication.

Platform Description N/A

3.2 area default-cost

Use this command to set the cost of the default route for the ABR in the stub or NSSA area. Use the **no** form of this command to restore the default setting.

area *area-id* **default-cost** *cost*

no area *area-id* **authentication**

Parameter Description

Parameter	Description
area-id	Area ID of the stub or NSSA area. It can be an integer or an IPv4 prefix.
cost	Cost of the default route of the stub or NSSA area in the range from 0 to 16777215.

Defaults The default cost is 1.

Command Mode Routing process configuration mode.

Usage Guide This command can only work in the ABR connected to the stub area.

Configuration Examples The following example sets the cost of the default route of stub area 50 to 100.

```
ipv6 router ospf 1
area 50 stub
area 50 default-cost 100
```

Related Commands

Command	Description
area stub	Sets a stub area.

Platform Description N/A

3.3 area encryption

Use this command to enable encryption authentication for an OSPFv3 area. Use the **no** form of this command to restore the default setting.

area *area-id* **encryption ipsec spi** *spi* **esp null** [**md5** | **sha1**] [**0 | 7**] *key*

no area *area-id* **encryption**

Parameter Description

Parameter	Description
area-id	Specifies an area ID. It can be an integer or the prefix of an IPv4 address.
spi	Specifies a security parameter index, in the range from 256 to 4294967295.
null	Specifies the null encryption mode.
md5	Specifies the MD5 authentication mode.
sha1	Specifies the SHA1 authentication mode.
0	Indicates that a key is displayed in the plain-text format.
7	Indicates that a key is displayed in the cipher-text format.
Key	Specifies an authentication key.

Defaults Encryption authentication is not performed by default.

Command Mode Routing process configuration mode

Usage Guide RGOS supports the null encryption mode and two authentication modes: MD5 and SHA1.
If encryption authentication is configured for an OSPFv3 area, the configuration takes effect on all interfaces (except for those of virtual links) in the area. Encryption authentication configuration on interfaces, however, takes precedence over that of the OSPFv3 area.

Configuration Examples The following example specifies null encryption and MD5 authentication for area 1 where OSPFv3 routing processes reside, and sets the authentication password to aaaaaaaaaaaaaaaaaaaaaaaaaaaaaa.

```
Ruijie(config-router)# area 1 encryption ipsec spi 300 esp null md5
aaaaaaaaaaaaaaaaaaaaaaaaaaaaaa
```

Related Commands

Command	Description
ipv6 ospf encryption	Specifies interface encryption authentication.
area virtual-link encryption	Specifies virtual link encryption authentication.

Platform Description N/A

3.4 area nssa

Use this command to configure an NSSA area. Use the **no** form of this command to remove the NSSA area configuration.

area *area-id* **nssa** [**no-redistribution**] [**default-information-originate** [**metric** *value*] [**metric-type** *type*]] [**no-summary**] [**translator** [**stability-interval** *seconds* | **always**]]

no area *area-id* **nssa** [**no-redistribution**] [**default-information-originate** [**metric**] [**metric-type**]] [**no-summary**] [**translator** [**stability-interval** | **always**]]

Parameter Description

Parameter	Description
area-id	ID of the NSSA area.
no-redistribution	(Optional) Used when the router is an NSSA Area Border Router (ABR) and you want the redistribute command to import routes only into the normal areas, but not into the NSSA area.
default-information-originate	(Optional) Used to generate a Type 7 default into the NSSA area. This keyword takes effect only on the NSSA ABR or the NSSA Autonomous System Boundary Router (ASBR).
metric *value*	(Optional) Specifies the OSPF default LSA metric. The range is from 0 to 16,777,214, and the default value is 1.
metric-type *type*	(Optional) Specifies the OSPF metric type for default routes. The value can be 1 or 2 and the default value is 2.
no-summary	(Optional) Allows an area to be an NSSA but not have summary routes injected into it.
translator	(Optional) Configures the NSSA ABR translator.
stability-interval *seconds*	(Optional) Configures the stablibity interval after the role of an NSSA ABR is changed from translator to non-translator. The range is from 0 to 2,147,483,647, the default value is 40 and the unit is second.
always	(Optional) Configures the NSSA ABR to be always translator. The default NSSA ABR is a non-translator.

Defaults No NSSA area is defined by default.

Command Routing process configuration mode

Mode

Usage Guide The **default-information-originate** parameter is used to generate a default Type 7 LSA. There is a small difference between NSSA ABR and NSSA ASBR on which this command can take effect. On the ABR, the Type-7 default route generates no matter whether a default route exists in the routing table, while on the ASBR, the Type-7 default route generates only when a default routes exists in the routing table.

The **no-redistribution** parameter is used when the router is an NSSA Area Border Router (ABR) and you want the redistribute command to import routes only into the normal areas, but not into the NSSA area. This parameter is generally used on the device acting as both ASBR and ABR in NSSA area to prevent the routes from being imported into the NSSA area.

The **no-summary** parameter allows an area to be an NSSA but not have summary LSAs injected into it.

In an NSSA area involving two or more ABR devices, by default, the ABR of larger router ID is elected as the translator for Type-7 to Type-5 translation. You can configure the **translator always** parameter to specify an ABR to be always the translator.

When the translator of an ABR device is replaced, the ABR still has the translation capability within the **stability-interval** time. After the stability-interval timer expires and the ABR is not elected as the translator again, then the LSAs translated from Type-7 to Type-5 will be removed from the AS.

To prevent route loop, the Type-5 LSAs aggregated by the Type-7 are removed once the ABR device loses the translator capability, instead of waiting for the stability-interval expiration.

It is recommended to configure the **translator always** parameter on only one ABR device in an NSSA area.

Configuration Examples The following example sets the area 1 as an NSSA area.

```
Ruijie(config)# ipv6 router ospf 1
Ruijie(config-router)# area 1 nssa
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.5 area range

Use this command to set the range of the converged inter-area addresses. Use the **no** form of this command to restore the default setting.

area *area-id* **range** *ipv6-prefix*/*prefix-length* [**advertise|not-advertise**]

no area *area-id* **range** *ipv6-prefix*/*prefix-length*

Parameter Description

Parameter	Description

area-id	ID of the area in which the addresses are converged. It can be an integer or an IPv4 prefix.
ipv6-prefix/prefix-length	Range of the converged addresses.
advertise	Advertises the range of converged addresses.
not-advertise	The range of the converged addresses is not advertised. By default, the function is enabled.

Defaults No converged inter-area address range is defined by default.

Command Mode Routing process configuration mode

Usage Guide This command applies only to ABR. Use this command to converge multiple routes of an area into one route and advertise it to other areas. This command applies only to ABR. Use this command to converge multiple routes of an area into one route and advertise it to other areas. The routing information combination only takes place on the area border. The specific routing information is seen on the intra-area routers, but only one converged route can be seen on the devices in other areas. By configuring the two options of advertise and not-advertise, you can decide whether to advertise the convergence range to enable blocking and filtering. By default, the range is advertised to the outside. The option cost can be used to set the metric value of convergence routing.
A number of route convergence commands can be defined. In this way, the number of the routes in the OSPF AS is reduced. Particularly for a large network, the forwarding performance will be improved.
When a number of routes are converged, and the containment relationship exists between items, the area range converged is determined by the longest match principle.

Configuration Examples The following example converges the routes in area 1.

```
ipv6 router ospf 1
area 1 range 2001:abcd:1:2::/64
```

Related Commands

Command	Description
summary-prefix	Sets the range of the external routes to be converged.

Platform Description N/A

3.6 area stub

Use this command to create a stub area or set its attributes. Use the **no** form of this command to restore the default setting.
area *area-id* **stub** [**no-summary**]
no area *area-id* **stub** [**no-summary**]

Parameter Description

Parameter	Description
area-id	ID of the stub area. It can be an integer or an IPv6 prefix.
no-summary	This option applies only to the ABR in the stub area, indicating that the ABR only advertises the type 3 LSA indicating the default route to the stub area, not other type 3 LSAs.

Defaults No stub area is defined by default.

Command Mode Routing process configuration mode

Usage Guide If an area is at the end of an entire network, it can be designed as the stub area, in which all the routers must execute the area stub command. If the area is designed as the stub area, it cannot learn the AS external routing information (type 5 LSAs). In practical application, the external routing information takes a large proportion of the link state database, so the devices in the stub area can only learn very little routing information, thus reducing the system resources required for the running of the OSPFv3 protocol.
By default, a type 3 LAS advertisement indicating default routing on the ABR in the stub area is generated, then the devices in the stub area can get to the outside of the AS.
If a totally stub area needs to be configured, just select the keyword **no-summary** when executing the **area stub** command on the ABR.

Configuration Examples The following example enables the ABR in stub area 10 to advertise the default route to the stub area.

```
ipv6 router ospf 1
area 10 stub
area 10 stub no-summary
```

Related Commands

Command	Description
area default-cost	Sets the cost of the default route in the stub area.

Platform Description N/A

3.7 area virtual-link

Use this command to create a virtual link or set its parameters. Use the **no** form of this command to restore the default setting.
area *area-id* **virtual-link** *router-id* [**hello-interval** *seconds*] [**dead-interval** *seconds*]
[**retransmit-interval** *seconds*] [**transmit-delay** *seconds*] [**instance** *instance-id*] [**authentication**

ipsec spi *spi* [**md5 | sha1**] [**0 | 7**] *key* **] [encryption ipsec spi** *spi* **esp null** [**md5 | sha1**] [**0 | 7**] *key*]

no area *area-id* **virtual-link** *router-id* [**hello-interval**] [**dead-interval**] [**retransmit-interval**] [**transmit-delay**] [**instance**] [**authentication**] [**encryption**]

Parameter Description

Parameter	Description
area-id	ID of the area in which the virtual link is located. It can be an integer or an IPv6 prefix.
Router-id	Neighbor router ID of the virtual link.
hello-interval *seconds*	Sets the interval to send the hello message on the local virtual link interface in the range from 1 to 65535 in the unit of seconds.
dead-interval *seconds*	Interval for the local interface of the virtual link to wait before considering that the neighbor fails. It is in the range from 1 to 65535 in the unit of seconds.
retransmit-interval *seconds*	Interval for retransmitting LSA on the local interface of the virtual link . The range is from 1 to 65535 in the unit of seconds.
transmit-delay *seconds*	Delay on the local interface of the virtual link in sending LSA. The range is from 1 to 65535 in the unit of seconds.
instnace *instance-id*	Specifies the instance corresponding to the virtual link. No virtual link can be established between different instances. Range: 0.-255
authentication ipsec spi *spi* [**md5 | sha1**] [**0 | 7**] *key*	Specifies OSPFv3 authentication. Authentication configuration on two neighboring devices must be consistent. The **service password-encryption** command enables a key to be displayed in the cipher-text format. *spi* specifies a security parameter index, in the range from 256 to 4294967295. **md5** specifies the MD5 authentication mode. **sha1** specifies the SHA1 authentication mode. 0 indicates that a key is displayed in the plain-text format. 7 indicates that a key is displayed in the cipher-text format. *key* specifies an authentication key.
encryption ipsec spi *spi* **esp null** [**md5| sha1**] [**0|7**] *key*	Specifies OSPFv3 encryption authentication. Authentication configuration on two neighboring devices must be consistent. The **service password-encryption** command enables a key to be displayed in the cipher-text format. *spi* specifies a security parameter index, in the range from 256 to 4294967295. **null** specifies the null encryption mode. **md5** specifies the MD5 authentication mode. **sha1** specifies the SHA1 authentication mode. 0 indicates that a key is displayed in the plain-text format.

	7 indicates that a key is displayed in the cipher-text format. *key* specifies an authentication key.
authentication ipsec spi *spi* [**md5 | sha1**] [**0 | 7**] *key*	Specifies OSPFv3 authentication. Authentication configuration on two neighboring devices must be consistent. The **service password-encryption** command enables a key to be displayed in the cipher-text format. *spi* specifies a security parameter index, in the range from 256 to 4294967295. **md5** specifies the MD5 authentication mode. **sha1** specifies the SHA1 authentication mode. 0 indicates that a key is displayed in the plain-text format. 7 indicates that a key is displayed in the cipher-text format. *key* specifies an authentication key.

Defaults

No virtual link is defined by default

hello-interval: 10 seconds; dead-interval: four times of the hello-interval; retransmit-interval: five seconds; transmit-interval: one second.

Authentication and encryption are not performed by default.

Command Mode

Routing process configuration mode

Usage Guide

In the OSPFv3 AS, all the areas must be connected with the backbone area to ensure that they can learn the routes of the whole OSPFv3 AS. If an area cannot be directly connected with the backbone area, it can connect it through a virtual link.

The virtual link shall not be in the stub or NSSA area.

configuration, **dead-interval** and **instance** shall be configured consistently on both sides of the virtual link neighbors, otherwise neighboring relationship cannot be set up between the virtual neighbors.

Configuration Examples

The following example configures a virtual link.

```
Ruijie(config)# ipv6 router ospf 1
Ruijie(config-router)# area 1 virtual-link 192.1.1.1
```

Related Commands

Command	Description
show ipv6 ospf	Displays the OSPFv3 routing process information.
show ipv6 ospf neighbor	Displays the OSPFv3 neighbor information.
show ipv6 ospf virtual-links	Displays the OSPFv3 virtual link information.

Platform Description N/A

3.8 asbr enable

Use this command to configure the device as ASBR. Use the **no** form of this command to restore the default settings.

asbr enable

no asbr enable

Parameter Description

Parameter	Description
N/A	

Defaults The device is not ASBR by default

Command Mode Routing process configuration mode

Usage Guide If the **redistribute** or **default-information** commands are run, OSPF routing device will turn into ASBR automatically. If the above commands are not configures but you want the device to become ASBR, you can configure **asbr enable**. If **asbr enable** is deleted yet **redistribute** or **default-information** is configured, the device is still ASBR.

Configuration Examples The following example configures the device as ASBR.

```
Ruijie(config)# ipv6 router ospf 1
Ruijie(config-router)# asbr enable
```

Related Commands

Command	Description

Platform Description N/A

3.9 auto-cost

The metric of the OSPFv3 protocol is the interface-based bandwidth. Use this command to enable the bandwidth-based interface metric calculation or modify the reference bandwidth. Use the **no** form of this command to restore the default setting.

auto-cost reference-bandwidth *ref-bw*

no auto-cost reference-bandwidth

Parameter

Parameter	Description

Description

reference-bandwidth *ref-bw*	Reference bandwidth in the range from 1 to 4294967 Mbps.

Defaults The interface metric is calculated based on the reference bandwidth, which is 100Mbps.

Command Mode Routing process configuration mode

Usage Guide Use **no auto-cost reference-bandwidth** to restore it to the default reference bandwidth.
You can use **ipv6 ospf cost** in the interface configuration mode to set the cost of the specified interface, and it takes precedence over the metric calculated based on the reference bandwidth.

Configuration Examples The following example changes the reference bandwidth to 10M.

```
ipv6 router ospf 1
auto-cost reference-bandwidth 5
```

Related Commands

Command	Description
ipv6 ospf cost	Sets the cost of an interface.
show ipv6 ospf	Displays the OSPFv3 routing process information.

Platform Description N/A

3.10 bdf all-interfaces

Use this command to enable the BDF on all OSPFv3 interfaces. Use this command to enable the BDF on all OSPFv3 interfaces in the routing configuration mode. Use the **no** form of this command to restore the default setting.
bdf all-interfaces
no bdf all-interfaces

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Routing process configuration mode.

Usage Guide The OSPFv3 protocol dynamically discovers the neighbors through the Hello packets. With the BFD

function enabled, BFD sessions will be established for the neighbors that match the FULL rules and the status of the neighbors will be detected through the BFD mechanism. Once the BFD neighbor fails, the OSPFv3 will perform the network convergence immediately.
You can also use the interface configuration mode command **ipv6 ospf bfd** [**disable**] to enable or disable the BFD function on the specified interface, which takes precedence over the command **bfd all-interfaces** in the routing process configuration mode.

Configuration Examples N/A

Related Commands

Command	Description
ipv6 router ospf *process-id*	Enables the OSPFv3 routing process and enter into the routing process configuration mode.
ipv6 ospf bfd [disable]	Enables or disable the BFD on the specified OSPFv3 interfaces.

Platform Description N/A

3.11 clear ipv6 ospf process

Use this command to clear and restart the OSPF process.
clear ipv6 ospf { **process** | *process-id*]

Parameter Description

Parameter	Description
process-id	OSPF process ID, in the range from 1 to 65535

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide In normal case, it is not necessary to use this command.
Use the parameter *process-id* to clear only one specific OSPFv3 instance. If no *process-id* is specified, all the OSPFv3 instances will be cleared.

Configuration Examples The following example restarts the OSPF process.

```
enble
clear ipv6 ospf process
```

Related Commands

Command	Description

N/A	N/A

Platform Description N/A

3.12 default-information originate

Use this command to generate a default route to the OSPFv3 routing domain in the routing process mode. Use the **no** form of this command to restore the default setting.

default-information originate [**always**] [**metric** *metric*] [**metric-type** *type*] [**route-map** *map-name*]

no default-information originate [**always**] [**metric**] [**metric-type**] [**route-map** *map-name*]

Parameter Description

Parameter	Description
always	(Optional) It makes OSPFv3 generate the default route unconditionally, no matter whether the default route exists locally or not.
metric *metric*	(Optional) Initial metric value of the default route, in the range from 0 to 16777214
metric-type *type*	(Optional) Type of the default route. There are two type of OSPF external routes: type 1, different metrics seen on different routers; type 2, the same metric seen on different routers.
route-map *map-name*	Associated route-map name, no associated route-map by default

Defaults No default route is created;
The initial metric value is 1;
The default route type is type 2.

Command Mode Routing process configuration mode

Usage Guide When the **redistribute** or default-information command is executed, the OSPFv3-enabled router automatically turns into the autonomous system border router (ASBR). But the ASBR cannot generate the default route automatically or advertise it to all the routers in the OSPFv3 routing domain. The ASBR generates default routes by default. It is required to configure with the routing process configuration command **default-information originate**.

If the always parameter is used, the OSPF routing process advertises an external default route to the neighbors, no matter whether the default route in the core routing table exists or not. However, the local router does not display the default route. To make sure whether the default route is generated, execute **show ipv6 ospf database** to observe the OSPF link state database. The execution of the **show ipv6 route** command on the OSPF neighbor will display the default route.

The metric of the external default route can be defined only with the **default-information originate** command and cannot be set with the **default-metric** command.

There are two types of OSPFv3 external routes: type 1 external routes have changeable routing metrics, while type 2 external routes have constant routing metrics. For two parallel routes with the same route metric to the same destination network, type 1 takes precedence over type 2. As a result, the **show ipv6 route** command displays only the type 1 route.
This command generates a default route of Type-5 LSA, which will not be flooded to the NSSA area. To generate a default route in the NSSA area, use the **area nssa default-information-originate** command.
The routers in the stub area cannot generate external default routes.

Configuration Examples The following example generates a default route.

```
default-information originate always
```

Related Commands

Command	Description
redistribute	Redistribute routes.
show ipv6 ospf	Displays the OSPFv3 routing process information.
show ipv6 ospf database	Displays the OSPFv3 link state database information.

Platform Description N/A

3.13 default-metric

Use this command to set the default metric for the routes to be redistributed. Use the **no** form of this command to restore the default setting
default-metric *metric-value*
no default-metric

Parameter Description

Parameter	Description
metric-value	Default metric for the routes to be redistributed. Its range is from 1 to 16777214.

Defaults The default is 20.

Command Mode The default route type is type 2.

Usage Guide This command can be used together with **redistribute** to set the default metric for the routes to be redistributed. But this command does not apply to two types of routes:

- The **default route generated** with default-information originate;

- The redistributed direct route, for which 20 is always the default metric value.

Configuration Examples The following example sets the default metric for the routes to be redistributed to 10.

```
default-metric 10
```

Related Commands

Command	Description
redistribute	Redistributes the routes.
show ipv6 ospf	Displays the OSPFv3 routing process information.

Platform Description N/A

3.14 distance

Use this command to set the management distance corresponding to different types of OSPFv3 routes. Use the **no** form of this command to restore the default setting.

distance { *distance* | **ospf** { **intra-area** *distance* | **inter-area** *distance* | **external** *distance* } }

no distance [**ospf**]

Parameter Description

Parameter	Description
distance	Sets the management distance of the route, in the range from 1 to 255.
intra-area *distance*	Sets the management distance of the intra-area route, in the range from1 to 255.
inter-area *distance*	Sets the management distance of the inter-area route, in the range from 1 to 255.
external *distance*	Sets the management distance of the external route, in the range from 1 to 255.

Defaults The default value is 110.
Management distance of the intra-area route :110,
Management distance of the inter-area route :110
Management distance of the external-area route: 110.

Command Mode Routing process configuration mode.

Usage Guide This command is used to specify different management distances for different types of OSPFv3 routes. The management distance of the route is used for the comparison of routing priority, the smaller the management distance is, the higher the routing priority.

The priority of the route generated by different OSPFv3 processes must be compared using the management distance.

Setting the management distance as 255 indicates the routing entry is unreliable and will not for the packet forwarding.

Configuration Examples the following example sets the OSPFv3 external route management distance to 160.

```
Ruijie(config)# ipv6 router ospf 20
Ruijie(config-router)# distance ospf external 160
```

Related Commands

Command	Description
ipv6 router ospf	Enables the OSPFv3 routing process .

Platform Description N/A

3.15 distribute-list in

Use this command to filter routes that are computed based on Link State Advertisement (LSA). Use the **no** form of this command to restore the default setting.

distribute-list { *name* | **prefix-list** *prefix-list-name* } **in** [*interface-type interface-number*]

no distribute-list { *name* | **prefix-list** *prefix-list-name* } **in** [*interface-type interface-number*]

Parameter Description

Parameter	Description
name	Specifies an ACL filtering rule.
prefix-list *prefix-list-name*	Specifies a prefix list filtering rule.
interface-type interface-number	Specifies an interface on which LSA-based routes are filtered.

Defaults Routes are not filtered by default.

Command Mode Routing process configuration mode

Usage Guide Filter the routes computed based on LSA. Only the routes meeting filtering conditions can be forwarded. Route filtering does not affect the link state database and the routing tables of the neighbors. The ACL and prefix list filtering rules cannot be set at the same time. You can set only the ACL filtering rule or the prefix list filtering rule for a specific interface.

The routing filtering rules affect only forwarding of local routes but not route computation based on LSA. When route filtering is configured on an ABR, LSA can still compute routes and generate and send inter-area LSAs with prefixes to other areas. This will cause blackhole routes. To prevent the generation of blackhole routes, you can run the **area range** command with the **not-advertise**

keyword.

Configuration Examples The following example filters routes that are computed based on Link State Advertisement (LSA).

```
Ruijie(config)# ipv6 prefix-list aaa seq 10 permit 2001::/64
Ruijie(config)# ipv6 router ospf 25
Ruijie(config-router)# redistribute rip metric 100
Ruijie(config-router)# distribute-list prefix-list aaa in ethernet 0/1
```

Related Commands

Command	Description
area range	Configures route aggregation in an area.

Platform Description N/A

3.16 distribute-list out

Use this command to filter routes that are re-distributed. This command has the similar function as the **redistribute** command. Use the **no** form of this command to restore the default setting.

distribute-list { *name* | **prefix-list** *prefix-list-name* } **out** [**bgp** | **connected** | **isis** [*area-tag*] | **ospf** *process-id* | **rip** | **static**]

no distribute-list { *name* | **prefix-list** *prefix-list-name* } **out** [**bgp** | **connected** | **isis** [*area-tag*] | **ospf** *process-id* | **rip** | **static**]

Parameter Description

Parameter	Description
name	Specifies the ACL filtering rule.
prefix-list *prefix-list-name*	Specifies the prefix list filtering rule.
bgp | connected | isis [*area-tag*] | **ospf** process-id | **rip** | **static**	Specifies the source from which the routes are filtered.

Defaults Routes are not filtered by default.

Command Mode Routing process configuration mode

Usage Guide The **distribute-list out** command has the similar function as the **redistribute route-map** command. It can be used to filter the routes that are re-distributed based on other protocols into an OSPFv3 area. It does not directly re-distribute routes but works with the **redistribute** command to re-distribute routes. The ACL and prefix list filtering rules cannot be configured at the same time. You can set only the ACL filtering rule or the prefix list filtering rule to filter the routes from a specific source.

Configuration The following example filters static routes that are re-distributed.

Examples

```
Ruijie(config)# ipv6 router ospf 1
Ruijie(config-router)# redistribute static subnets
Ruijie(config-router)# distribute-list prefix-list jjj out static
```

Related Commands

Command	Description
redistribute	Re-distributes routes that are carried by other routing processes.

Platform Description N/A

3.17 enable mib-binding

Use this command to bind MIB to a specific OSPFv3 process. Use the **no** form of this command to restore the default setting.

enable mib-binding

no enable mib-binding

Parameter Description

Parameter	Description
N/A	N/A

Defaults MIB is bound to an OSPFv3 process with the smallest process number by default.

Command Mode Routing process configuration mode

Usage Guide OSFPv3 MIB has no configuration information about OSFPv3 processes. You can operate only one OSFPv3 process through SNMP. OSFPv3 MIB is bound to the OSFPv3 process with the smallest process number by default. Users' operations take effect on this process.

To operate a specific OSFPv3 process through SNMP, you can bind OSFPv3 MIB to the process.

Configuration Examples The following example enables users to operate the OSPFv3 process with the process number of 100 through SNMP.

```
Ruijie(config)# ipv6 router ospf 100
Ruijie(config-router)# enable mib-binding
```

Related Commands

Command	Description
show ipv6 ospf	Displays global OSPFv3 configuration information.
enable traps	Enables the OSPFv3 trap function.

Platform Description N/A

3.18 enable traps

OSPFv3 processes support eight types of trap information, which are classified into two categories. Use this command to send specific trap information. Use the **no** form of this command to restore the default setting.

enable traps [**error** [**IfConfigError | IfRxBadPacket | VirtIfConfigError | VirtIfRxBadPacket**] | **state-change** [**IfStateChange | NbrStateChange | NssaTranslatorStatusChange | VirtIfStateChange | VirtNbrStateChange**]]

no enable traps [**error** [**IfConfigError | IfRxBadPacket | VirtIfConfigError | VirtIfRxBadPacket**] | **state-change** [**IfStateChange | NbrStateChange | NssaTranslatorStatusChange | VirtIfStateChange | VirtNbrStateChange**]]

Parameter Description

Parameter	Description
Error	Configures all error-related trap types. This keyword can also specify the following types of error traps: **IfConfigError** Specifies an interface parameter error; **IfRxBadPacket** Specifies incorrect packets received by an interface; **VirtIfConfigError** Specifies a parameter error on a virtual interface; **VirtIfRxBadPacket** Specifies incorrect packets received by a virtual interface.
state-change	Configures all traps related to state change. This keyword can also specify the following traps related to state change: **IfStateChange** Specifies state change of an interface; **NbrStateChange** Specifies state change of a neighbor; **NssaTranslatorStatusChange** Specifies status change of the NSSA translator. **VirtIfStateChange** Specifies state change of a virtual interface; **VirtNbrStateChange** Specifies state change of a virtual neighbor.

Defaults All traps are disabled by default.

Command Mode Routing process configuration mode

Usage Guide Before configuring this command, you must run the **snmp-server enable traps ospf** command; otherwise, OSPFv3 trap information cannot be sent correctly**.** This is because the function of this command is restricted by the **snmp-server** command.
You can synchronously enable the trap function of different processes even if MIB is not bound to these processes.

Configuration Examples The following example enables all traps of OSPFv3 process 100.

```
Ruijie(config)#ipv6 router ospf 100
Ruijie(config-router)# enable traps
```

Related Commands

Command	Description
show ipv6 ospf	Displays global OSPFv3 configuration information.
enable mib-binding	Binds MIB to an OSPFv3 process.
snmp-server enable traps ospf	Enables OSPFv3 to send trap information.

Platform Description N/A

3.19 graceful-restart

Use this command to enable the OSPFv3 graceful restart (GR) function and to set the GR period.
Use the **no** form of this command to restore the default setting.
graceful-restart [**grace-period** *grace-period* | **inconsistent-lsa-checking**]
no graceful-restart [*graceful-period*]

Parameter Description

Parameter	Description
grace-period *grace-period*	Configures the GR period. The GR period is the longest interval that lasts from the moment when OSPFv3 fails to the moment when OSPFv3 gracefully restarts. The GR period is in the range from 1 to 1800 in the unit of seconds. The default is 120.
inconsistent-lsa-checking	Configures the topology change detection. Once the topology change is detected, the device will exit GR and finish the convergence, This function is enabled by default after GR is enabled.

Defaults This function is enabled by default.

Command Mode Routing process configuration mode

Usage Guide GR is configured based on the OSPFv3 instance. Different instances could be configured with

different parameters.

Use this command to configure the GR period. The GR period is the longest interval that lasts from the moment when OSPFv3 fails to the moment that OSPFv3 gracefully restarts. In this period, the device will perform link reconstruction to restore OSPFv3. When the GR period expires, OSPFv3 exits GR and finishes regular operation.

To enable the GR function and set the GR period to the 120 seconds, use the **graceful-restart** command. To modify the GR period, use the **graceful-restart grace-period** command. Topology stability is indispensable for uninterrupted forwarding. If topology changes, OSPFv3 finishes convergence instead of continuing GR to avoid long time interruption

1) Disabling the topology change detection: If the topology cannot converge in time in the hot backup process, the long term forwarding interruption may occur.

2) Enabling the topology change detection: Forwarding interruption may occur but the interruption time is much shorter than the time it takes to disable topology detection.

It is not recommended to disable the topology change detection. In some scenario where long term forwarding interruption does not occur, disabling the topology change detection minimizes the forwarding interruption time.

The GR function is unavailable when the Fast Hello function is enabled.

Configuration Examples The following example enables GR for OSPFv3 instance 1 and sets the GR period to 60 seconds.

```
Ruijie(config)# ipv6 router ospf 1
Ruijie(config-router)# graceful-restart
Ruijie(config-router)# graceful-restart grace-period 60
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.20 graceful-restart helper

Use this command to enable the OSPFv3 graceful restart helper function. Use the **no** form of this command to disable this function.

graceful-restart helper disable

no graceful-restart helper disable

Use this command configure the topology change detection method of OSPFv3 GR helper. Use the **no** form of this command to cancel the configuration.

graceful-restart helper { **strict-lsa-checking** | **internal-lsa-checking**}

no graceful-restart helper {**strict-lsa-checking** | **internal-lsa-checking**}

Parameter Description

Parameter	Description
disable	Disables the device to assist other devices in performing GR.

strict-lsa-checking	Checks the change of the LSA of types 1-5 and 7 to judge whether the network topology changes. If the topology changes, the GR helper function will be disabled.
internal-lsa-checking	Checks the change of the LSA of types 1–3 to judge whether the network topology changes. If the topology changes, the GR helper function will be disabled.

Defaults The GR helper is enabled by default.
The device where the GR helper is enabled does not check the LSA change by default.

Command Mode Routing process configuration mode

Usage Guide Use this command to enable the GR helper function. When one neighbor device performs graceful restart, the Grace-LSA is advertised to all neighbors. If the device enabled with the GR helper receives the Grace-LSA, it will become the GR Helper to help the neighbors perform GR. The **disable** option means that it is not allowed to perform the GR helper function for any device in GR.
The GR helper does not perform the network change detection by default. The convergence is not performed again until the GR is implemented even if the network changes. Use the **strict-lsa-checking orinternal-lsa-checking** command to enable the device to detect the change of network topology during the GR. The former checks any LSA (types 1-5,7) that stands for the network information, the latter checks the LSA that stands for the AS inner-area route. In the large scale network, it is not recommended to enable the LSA check option because the partial network changes trigger the ending of the GR, decreasing the convergence speed of the entire network.

Configuration Examples The following example disables the GF helper function of the OSPFv3 instance 1 and modifies the topology change detection policy.

```
Ruijie(config)# ipv6 router ospf 1
Ruijie(config-router)# graceful-restart helper disable
Ruijie(config-router)# no graceful-restart helper disable
Ruijie(config-router)# graceful-restart helper strict-lsa-checking
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.21 ipv6 ospf area

Use this command to enable the interface to participate in the OSPFv3 routing process. Use the **no** form of this command to restore the default setting.
ipv6 ospf *process-id* **area** *area-id* [**instance** *instance-id*]

no ipv6 ospf *process-id* **area** [**instance** *instance-id*]

Parameter Description

Parameter	Description
process-id	OSPF process ID.
area *area-id*	OSPFv3 area in which the interface participates. It can be an integer or an IPv4 prefix.
instance *instance-id*	Configures the specific OSPFv3 instance on the interface.

Defaults This function is disabled by default.

Command Mode Interface configuration mode.

Usage Guide You can use this command to enable the OSPFv3 on an interface, and then configure the OSPFv3 process with **ipv6 router ospf**. it will be automatically started after this command is used., it will be automatically started after this command is used.
Use **no ipv6 ospf area** to disable the specified interface to participate in the OSPFv3 routing process.
Use **no ipv6 router ospf** to disable all the interfaces to participate in the OSPFv3 routing process.
The neighbor relationship can only be established between the routers with the same instance ID.
After this command is configured, all the prefix information on the interface will be used in the operation of the OSPFv3.

Configuration Examples The following example starts the OSPFv3 process on int fastethernet 0/0 for the specified area of the specified instance.

```
int fastethernet 0/0
ipv6 ospf 1 area 2 instance 2
```

Related Commands

Command	Description
ipv6 router ospf	Starts the OSPFv3 routing process.
passive-interface	Setsthe a passive interface.
show ipv6 ospf interface	Displays the OSPFv3 interface information.

Platform Description N/A

3.22 ipv6 ospf authentication

Use this command to configure OSPFv3 interface authentication. Use the **no** form of this command to restore the default setting.
ipv6 ospf authentication [**null | ipsec spi** *spi* [**md5** [**string-key**] **| sha1**] [**0 | 7**] *key*]
no ipv6 ospf authentication

Parameter Description

Parameter	Description
null	Indicates that authentication is not performed.
spi	Specifies a security parameter index, in the range from 256 to 4294967295.
md5	Specifies the MD5 authentication mode.
string-key	Indicates that MD5 authentication key supports special characters.
sha1	Specifies the SHA1 authentication mode.
0	Indicates that a key is displayed in the plain-text format.
7	Indicates that a key is displayed in the cipher-text format.
key	Specifies an authentication key.

Defaults Authentication is not performed by default.

Command Mode Interface configuration mode

Usage Guide RGOS supports three authentication modes:

- null authentication mode, which is configured when authentication is not needed
- MD5 authentication mode
- SHA1 authentication mode

OSPFv3 authentication parameters configured on interconnected interfaces must be consistent.

Configuration Examples The following example specifies MD5 authentication in OSPFv3 interface configuration mode and sets the authentication password to aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa.

```
Ruijie(config-if)# ipv6 ospf authentication ipsec spi 300 md5
aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa
```

Related Commands

Command	Description
ipv6 ospf authentication	Specifies interface authentication.
area virtual-link authentication	Specifies virtual link authentication.

Platform Description N/A

3.23 ipv6 ospf bdf

Use this command to enable or disable the BFD on the specified OSPFv3-enabled interface. Use the **no** form of this command to restore the default setting.

ipv6 ospf bfd [**dsable**] [**instance** *instance-id]*

no ipv6 ospf bfd [**instance** *instance-id*]

Parameter Description

Parameter	Description
disable	Disables the BFD function on the specified OSPF interface.
instance *instance-id*	Configures the specified OSPFv3 instance on the interface, in the range from 0 to 255.

Defaults No configuration is made by default. The BFD configuration in the OSPFv3 process configuration mode will apply.

Command Mode Interface configuration mode.

Usage Guide The command ipv6 ospf bfd in the interface configuration mode takes precedence over the **bfd all-interfaces** command in the routing process configuration mode.
You can use this command to enable the BFD on the specified interface according to the actual environment, also can use the command **bfd all-interfaces** in the OSPFv3 process configuration mode to enanble the BFD function on all OSPFv3 interfaces and use the command ip **v6 ospf bfd disable** to disable the BFD on the specified interface.

Configuration Examples N/A

Related Commands

Command	Description
ipv6 router ospf *process-id*	Starts the OSPFv3 routing process and enter into the routing process configuration mode.
bdf all-interfaces	Enables the BFD on all OSPFv3 interfaces.

Platform Description N/A

3.24 ipv6 ospf cost

Use this command to set the cost of the interface. Use the **no** form of this command to restore the default setting
ipv6 ospf cost *cost* [**instance** *instance-id*]
no ipv6 ospf cost [**instance** *instance-id*]

Parameter Description

Parameter	Description
Cost	Cost of interface, in the range from 0 to 65535.
instance *instance-id*	Configures the specific OSPFv3 instance on the interface, in the

	range from 0 to 255.

Defaults The default interface cost is the reference bandwidth/Bandwidth (100Mbps by default).

Command Mode Interface configuration mode.

Usage Guide By default, the cost of the OSPFv3 interface is 100Mbps/Bandwidth, in which the Bandwidth is the bandwidth of the interface and configured with the command **bandwidth** in the interface configuration mode.

The default costs of OSPFv3 interfaces for several typical lines are:

- 64K serial line: 1562;
- E1 line: 48
- 10M Ethernet: 10
- 100M Ethernet: 1

The OSPFv3 cost configured with the command **ipv6 ospf cost** will overwrite the default configuration.

Configuration Examples The following example sets the cost of the interface to 1:

```
ipv6 ospf cost 1
```

Related Commands

Command	Description
show ipv6 ospf interface	Displays the OSPFv3 interface information.
ipv6 ospf area	Sets the interface to participate in the OSPFv3 routing process.

Platform Description N/A

3.25 ipv6 ospf dead-interval

Use this command to set a dead interval of neighbors on an interface. If no hello packet is received from a neighbor within the interval, the neighboring relationship is considered to fail. Use the **no** form of this command to restore the default setting

ipv6 ospf dead-interval { *seconds* | **minimal hello-multiplier** *multiplier* } [**instance** *instance-id*]

no ipv6 ospf dead-interval [**instance** *instance-id*]

Parameter Description

Parameter	Description
seconds	Dead interval of neighbors. Its range is from 1 to 65535 in the unit of seconds.

minimal hello-multiplier *multiplier*	Enables the fast hello function, which takes 1s as the dead interval of neighbors. *Multiplier* specifies the number of hello packets sent in one second, in the range from 3 to 20.
instance *instance-id*	Configures the specific OSPFv3 instance on the interface, in the range from 0 to 255.

Defaults

If the fast hello function is not enabled, the dead interval of neighbors is four times longer than the hello interval.

If the hello interval is changed, the dead interval of neighbors varies automatically.

Command Mode

Interface configuration mode

Usage Guide

The dead interval of neighbors must be longer than the hello interval.

The OSPFv3 fast hello function allows OSPFv3 to fast discovery neighbors and detect whether neighboring relationships are valid. To enable the OSPFv3 fast hello function, you can specify the **minimal** and **hello-multiplier** keywords and the *multiplier* parameter in this command. **minimal** specifies the deal interval of neighbors to be 1s; **hello-multiplier** specifies the number of times that hello packets are sent in a second. Therefore, this configuration reduces the hello interval to be shorter than 1s.

If an interface is enabled with the fast hello function, the **hello-interval** field of hello packets to be advertised by this interface is set to 0, and that of hello packets received from this interface is omitted**.**

dead-interval, **minimal**, and **hello-multiplier** that are introduced to enable the fast hello function cannot be configured together with **hello-interval**.

No matter whether the fast hello function is configured, the dead interval of neighbors on the interconnected interfaces of neighbors must be consistent. The values of **hello-multiplier** on the interconnected interfaces can be different but you must ensure that at least one hello packet is received within the dead interval of neighbors.

You can use the **show ipv6 ospf interface** command to monitor the dead interval of neighbors and the fast hello interval on an interface.

Configuration Examples

The following example sets the dead interval of neighbors to 60 seconds on an interface.

```
ipv6 ospf dead-interval 60
```

Related Commands

Command	Description
ipv6 ospf hello-interval	Sets the interval for sending the Hello message on an interface.
show ipv6 ospf interface	Displays the OSPFv3 interface information.
ipv6 ospf area	Sets the interface to participate in the OSPFv3 routing process

Platform Description N/A

3.26 ipv6 ospf encryption

Use this command to enable OSPFv3 encryption authentication on an interface. Use the **no** form of this command to restore the default setting.

ipv6 ospf encryption [**null | ipsec spi** *spi* **esp null** [**md5 | sha1**] [**0 | 7**] *key*]

no ipv6 ospf encryption

Parameter Description

Parameter	Description
null	Indicates that encryption authentication is not performed.
spi	Specifies a security parameter index, in the range from 256 to 4294967295.
null	Specifies the null encryption mode.
md5	Specifies the MD5 authentication mode.
sha1	Specifies the SHA1 authentication mode.
0	Indicates that a key is displayed in the plain-text format.
7	Indicates that a key is displayed in the cipher-text format.
key	Specifies an authentication key.

Defaults Encryption authentication is not performed by default.

Command Mode Interface configuration mode

Usage Guide RGOS supports the null encryption mode and two authentication modes: MD5 and SHA1.

OSPFv3 encryption authentication parameters configured on interconnected interfaces must be consistent.

Configuration Examples The following example specifies null encryption and MD5 authentication in OSPFv3 interface configuration mode and sets the authentication password to aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa.

```
Ruijie(config-if)# ipv6 ospf encryption ipsec spi 300 esp null md5
aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa
```

Related Commands

Command	Description
area encryption	Specifies area encryption authentication.
area virtual-link encryption	Specifies virtual link encryption authentication.

Platform Description N/A

3.27 ipv6 ospf hello-interval

Use this command to set the interval for the interface to send the Hello message. Use the **no** form of this command to restore the default setting

ipv6 ospf hello-interval *seconds* [**instance** *instance-id*]

no ipv6 ospf hello-interval [**instance** *instance-id*]

Parameter Description

Parameter	Description
seconds	Interval for sending the Hello message. Its range is from 1 to 65535 in the unit of seconds.
instance *instance-id*	Configures the specific OSPFv3 instance on the interface.

Defaults The broadcast network and point-to-point network :10 seconds. The point-to-multipoint network and NBMA network :30 seconds.

Command Mode Interface configuration mode.

Usage Guide The same hello sending intervals must be set for the neighbors, otherwise the normal adjacency cannot be established.

The *dead-interval minimal hello-multiplier* and *hello-interval* parameters for Fast Hello cannot be configured simultaneously.

Configuration Examples The following example sets the interval for the interface to send the Hello message to 20 seconds.

```
ipv6 ospf hello-interval 20
```

Related Commands

Command	Description
ipv6 ospf dead-interval	Sets the interval for the interface to consider that the neighbor fails.
show ipv6 ospf interface	Displays the OSPFv3 interface information.
ipv6 ospf area	Sets the interface to participate in the OSPFv3 routing process.

Platform Description N/A

3.28 ipv6 ospf mtu-ignore

Use this command to ignore the MTU check when an interface receives the database description message. Use the **no** form of this command to restore the default setting.

ipv6 ospf mtu-ignore [**instance** *instance-id*]
no ipv6 ospf mtu-ignore [**instance** *instance-id*]

Parameter Description

Parameter	Description
instance *instance-id*	Configures the specific OSPFv3 instance on the interface, in the range from 0 to 255.

Defaults The MTU check is enabled by default.

Command Mode Interface configuration mode.

Usage Guide After receiving the database description message, the OSPFv3 device will check whether the MTU of neighbor interface is the same as its own MTU. If the received database description message indicates an MTU greater than its own interface's MTU, the neighbor relationship cannot be established. This can be fixed by disabling the MTU check.

Configuration Examples The following example disables the MTU check function on the ethernet 1/0.

```
Ruijie(config)# interface ethernet 1/0
Ruijie(config-if)# ipv6 ospf mtu-ignore
```

Related Commands

Command	Description
ipv6 router ospf	Starts the OSPFv3 routing process.
ipv6 mtu	Sets the value of IPv6 MTU of the interface.

Platform Description N/A

3.29 ipv6 ospf neighbor

Use this command to configure the OSPFv3 neighbor manually. Use the **no** form of this command to restore the default setting.
ipv6 ospf neighbor *ipv6-address* [[**cost** <1-65535>] [**poll-interval** <0-2147483647> | **priority** <0-255>]] [**instance** *instance-id*]
no ipv6 ospf neighbor *ipv6-address* [[cost <1-65535>] [**poll-interval** < 0-2147483647 > | **priority** < 0-255 >]] [**instance** *instance-id*]

Parameter Description

Parameter	Description
cost *cost*	(Optional) Configures the cost to each neighbor in point-to-multipoint network. It is not defined by default, where the cost configured on the interface will be used. It ranges from 1 to 65535.

	Only the networks of the point-to-multipoint type support this option.
poll-interval *seconds*	(Optional) Interval for polling the neighbors (in seconds), which ranges from 1 to 2147483647. Only the networks of the non-broadcast (NBMA) type support this option.
priority *priority*	(Optional) Configures the priority value of non-broadcast network neighbors, which ranges from 0 to 255. Only the non-broadcast (NBMA) type network supports this option.
instance *instance-id*	(Optional) Configures the specific OSPFv3 instance on the interface, which ranges from 0 to 255.

Defaults No neighbor is defined;
Neighbor polling interval: 120 seconds;
Priority value of non-broadcast network neighbor: 0.

Command Mode Interface configuration mode.

Usage Guide You can set relevant parameters for the neighbors depending on the actual network type.

Configuration Examples The following example shows how to configure the OSPFv3 neighbor in NBMA network as follows: IPv6 address: fe80::2d0:f8ff:fe22:3533, priority value: 1, polling interval: 150 seconds.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ipv6 ospf network non-broadcast
Ruijie(config-if)#ipv6 ospf neighbor fe80::2d0:f8ff:fe22:3533 priority 1
poll-interval 150
```

Related Commands

Command	Description
Ipv6 ospf priority	Sets the priority value of an interface.
Ipv6 ospf network	Sets the network type of an interface.

Platform Description N/A

3.30 ipv6 ospf network

Use this command to set the network type of the interface. Use the **no** form of this command to restore the default setting.

ipv6 ospf network { **broadcast** | **non-broadcast** | **point-to-point** | **point-to-multipoint** [**non-broadcast**] } [**instance** *instance-id*]

no ipv6 ospf network [**broadcast** | **non-broadcast** | **point-to-point** | **point-to-multipoint** [**non-broadcast**]] [**instance** *instance-id*]

Parameter Description

Parameter	Description
broadcast	Specifies the broadcast network type.
non-broadcast	Specifies the non-broadcast network type.
point-to-point	Specifies the point-to-point network type.
point-to-multipoint	Specifies the point-to-multipoint network type.
point-to-multipoint non-broadcast	Specifies the point-to-multipoint non-broadcast network type.
instance *instance-id*	Configures the specific OSPFv3 instance on the interface with the valid id range from 0 to 255.

Defaults

Point-to-point network type: PPP, SLIP, frame relay point-to-point sub-interface and X.25 point-to-point sub-interface encapsulation.
NBMA network type: frame relay(except for the point-to-point sub-interface) and X.25 encapsulation (except for the point-to-point sub-interface)
Broadcast network type: Ethernet encapsulation.
The point-to-multipoint network type is not the default type.

Command Mode

Interface configuration mode.

Usage Guide

You can set the network type of the interface according to the actual link type applied and the topology.

Configuration Examples

The following example sets the network type of the interface that participates in the OSPFv3 to point-to-point.

```
ipv6 ospf network point-to-point
```

Related Commands

Command	Description
ipv6 ospf priority	Sets the interface priority.
show ipv6 ospf interface	Displays the OSPFv3 interface information.
ipv6 ospf area	Sets the interface to participate in the OSPFv3 routing process.

Platform Description

N/A

3.31 ipv6 ospf priority

Use this command to set the interface priority. Use the **no** form of this command to restore the default setting.

ipv6 ospf priority *number-value* [**instance** *instance-id*]

no ipv6 ospf priority [**instance** *instance-id*]

Parameter Description

Parameter	Description
number-value	The priority of the interface. Its range is from 0 to 255.
instance *instance-id*	Configures the specific OSPFv3 instance on the interface. Its range is from 0 to 255.

Defaults The default priority is 1.

Command Mode Interface configuration mode.

Usage Guide In the broadcast network type, it is necessary to elect the DR/BDR. In electing the DR/BDR, the device of a higher priority is preferred. If several devices are of the same priority, the one with the largest router-ID is preferred.
The device with the priority level of 0 does not participate in the election of DR/BDR.

Configuration Examples The following example disables the interface from being elected as the DR/BDR.

```
ipv6 ospf priority 0
```

Related Commands

Command	Description
ipv6 ospf network	Sets the network type of an interface.
router-id	Sets the ID of a router.
show ipv6 ospf interface	Displays the OSPFv3 interface information.
instance *instance-id*	Configures the specific OSPFv3 instance on the interface.

Platform Description N/A

3.32 ipv6 ospf retransmit-interval

Use this command to set the interval for the interface to retransmit the LSA. Use the **no** form of this command to restore the default setting.
ipv6 ospf retransmit-interval *seconds* [**instance** *instance-id*]
no ipv6 ospf retransmit-interval [**instance** *instance-id*]

Parameter Description

Parameter	Description
seconds	Interval for retransmitting the LSA.

	Its range is from 1 to 65535 in the unit of seconds.
instance *instance-id*	Configures the specific OSPFv3 instance on the interface.

Defaults The default is five seconds.

Command Mode Interface configuration mode.

Usage Guide To ensure the reliability of the routing information transmission, the LSA sent to the neighbor shall be acknowledged by the neighbor. You can use this command to set the interval for the acknowledgement by the neighbor. If no acknowledgement is received within the specified period, the LSA information will be retransmitted.

Configuration Examples The following example sets the interval for retransmitting the LSA to 10 seconds.

```
ipv6 ospf retransmit-interval 10
```

Related Commands

Command	Description
show ipv6 ospf interface	Displays the OSPFv3 interface information.
ipv6 ospf area	Sets the interface to participate in the OSPFv3 routing process.

Platform Description N/A

3.33 ipv6 ospf transmit-delay

Use this command to set the delay on the interface in sending the LSA. Use the **no** form of this command to restore the default setting.

ipv6 ospf transmit-delay *seconds* [**instance** *instance-id*]

no ipv6 ospf transmit-delay [**instance** *instance-id*]

Parameter Description

Parameter	Description
seconds	The delay in sending LSA. Its range is from 1 to 65535 in the unit of seconds.
instance *instance-id*	Configures the ID of a specific OSPFv3 instance on the interface, in the range from 0 to 255.

Defaults The default is one.

Command Mode Interface configuration mode.

Usage Guide Use this command to set the delay on the interface in transmitting the LSA.

Configuration Examples The following example sets the delay on the interface in transmitting the LSA.

```
ipv6 ospf transmit-delay 2
```

Related Commands

Command	Description
show ipv6 ospf interface	Displays the OSPFv3 interface information.

Platform Description N/A

3.34 ipv6 router ospf

Use this command to start the OSPFv3 routing process. Use the **no** form of this command to restore the default setting.

ipv6 router ospf

ipv6 router ospf *process-id* [**vrf** *vrf-name*]

no ipv6 router ospf *process-id*

Parameter Description

Parameter	Description
process-id	OSPFv3 process ID number. Without the process number configured, it indicates that process 1 is started.
vrf-name	Specifies the VRF that OSPFv3 process belongs to.

Defaults No OSPFv3 routing process is started.

Command Mode Global configuration mode.

Usage Guide After the OSPFv3 process is started, the routing process configuration mode is entered.
At present, our products support up to 32 OSPFv3 processes.

Configuration Examples The following example starts OSPFv3 process in the specified VRF VPN1.

```
Ruijie(config)# ipv6 router ospf 1 vrf vpn_1
```

Related Commands

Command	Description
ipv6 ospf area	Configures an interface to participate in the OSPFv3 routing process.
show ipv6 ospf	Displays the OSPFv3 routing process information.

Platform Description N/A

3.35 ipv6 router ospf max-concurrent-dd

Use this command to set the maximum concurrent interacting neighbors allowed in all OSPFv3 routing processes. Use the **no** form of this command to restore the default setting.

ipv6 router ospf max-concurrent-dd *number*

no ipv6 router ospf max-concurrent-dd

Parameter Description

Parameter	Description
number	Maximum concurrent interacting neighbors, in the range from 1 to 65535.

Defaults The default is 5.

Command Mode Global configuration mode

Usage Guide When a router is exchanging data with multiple neighbors at the same time which affects its performance, by configuring this command, the maximum concurrent interacting neighbors allowed in all OSPFv3 routing processes can be restricted.

Configuration Examples The following example sets the maximum concurrent interacting neighbors allowed in all OSPFv3 routing processes to 4. The result is that in the interaction between a large number of neighbors, interactions with up to 4 neighbors are allowed to be initiated on this device concurrently, and interactions initiated by up to 4 neighbors are allowed to be received concurrently. That is, interaction with up to 8 neighbors is allowed on this device.

```
Ruijie#conf terminal
Ruijie(config)#ipv6 router ospf max-concurrent-dd 4
```

Related Commands

Command	Description
max-concurrent-dd	Sets the maximum concurrent interacting neighbors in the OSPFv3 processes

Platform Description N/A

3.36 ipv6 router ospf compatible lsa type-9

Use this command to add IPv6 prefix to type-9 LSA in OSPFv3 routing processes. Use the **no** form of

this command to restore the default settings.

ipv6 router ospf compatible lsa type-9

no ipv6 router ospf compatible

Parameter Description

Parameter	Description

Defaults By default, if the mask length is divisible by 32, type-9 LSA carries IPv6 prefix; otherwise, it carries IPv6 address.

Command Mode Global configuration mode

Usage Guide When a routing device is connected with quagga or other vendors' products, its LSA carries specific IPv6 address, but quagga carries IPv6 prefix, so the connection fails. Run this command so that the LSA advertised by the routing device carries IPv6 prefix.

Configuration Examples The following example adds IPv6 prefix to type-9 LSA in all OSPFv3 routing processes

```
Ruijie(config)#ipv6 router ospf compatible lsa type-9
```

Related Commands

Command	Description

Platform Description N/A

3.37 log-adj-changes

Use this command to enable the logging of adjacency changes. Use the **no** form of this command to restore the default setting.

log-adj-changes [detail]

no log-adj-changes [detail]

Parameter Description

Parameter	Description
detail	Displays details of adjacency changes

Defaults By default, the adjacency state log on the entry of or exit from the FULL state is output.

Command Mode Routing process configuration mode

Usage Guide N/A

Configuration Examples The following example turns on the log of adjacency state change.

```
Ruijie(config)# router ospf 1
Ruijie(config)# log-adj-changes detail
```

Related Commands

Command	Description
show ipv6 ospf	Displays the OSPF global configuration information

Platform Description N/A

3.38 max-concurrent-dd

Use this command to set the maximum number of DD packets that can be processed concurrently in the OSPFv3 routing process. Use the **no** form of this command to restore the default setting.

max-concurrent-dd *number*

no max-concurrent-dd

Parameter Description

Parameter	Description
number	Maximum number of DD packets that can be processed concurrently, in the range from 1 to 65535.

Defaults The default is 5.

Command Mode Routing process configuration mode.

Usage Guide When a router is exchanging data with multiple neighbors at the same time which affects its performance, by configuring this command, the maximum concurrent interacting neighbors allowed in each OSPFv3 instance can be restricted.

Configuration Examples The following example sets the maximum concurrent interacting neighbors allowed in the current OSPFv3 routing process to 4. The result is that in the interaction between a large number of neighbors, interactions with up to 4 neighbors are allowed to be initiated on this device concurrently, and interactions initiated by up to 4 neighbors are allowed to be received concurrently. That is, interaction with up to 8 neighbors is allowed on this device.

```
router ipv6 ospf 1
max-concurrent-dd 4
```

Related

Command	Description

Commands		
	ipv6 router ospf max-concurrent-dd	Sets the maximum concurrent interacting neighbors allowed in the OSPFv3 processes.

Platform Description N/A

3.39 nsr

Use this command to enable the non-stop routing (NSR) function. Use the **no** form of this command to restore the default settings.

nsr

no nsr

Parameter Description

Parameter	Description
N/A	N/A

Defaults The NSR function is disabled by default.

Command Mode Routing process configuration mode

Default Level 14

Usage Guide The NSR backs up relevant OSPFv3 information from the master Supervisor Engine to the slave Supervisor Engine of a distributed device, or from the master device to the slave device in a Virtual Switching Unit (VSU). In this way, the device can automatically recover the link status and re-generate a route upon an active/standby switchover, without requiring assistance from neighbor devices during the recovery. Information such as the neighbor relationship and link status needs to be backed up.

For the same OSPFv3 instance, either NSR or GR is enabled because they are mutually exclusive. Nevertheless, when NSR is enabled, the GR helper capability is still supported.

The switchover of distributed devices and VSU devices takes a period of time. If the OSPFv3 neighbor keepalive duration is shorter than the switchover duration, the OSPFv3 neighbor relationship with the neighbor device is removed, and services are interrupted during the switchover. Therefore, it is recommended that the OSPFv3 neighbor keepalive duration be no less than the default value when the NSR function is enabled. When Fast Hello is enabled, the OSPFv3 neighbor keepalive duration is less than 1 second and the OSPFv3 neighbor relationship times out during a switchover, causing NSR invalidity. Therefore, it is recommended that Fast Hello be disabled when NSR is enabled.

Configuration Examples The following example configures the NSR function.

```
Ruijie(config)# ipv6 router ospf 1
Ruijie(config-router)# nsr
```

Verification Run the **show ipv6 ospf** command to check whether the NSR function is enabled.

Common Errors The neighbor keepalive duration is short. When Fast Hello is enabled, the OSPFv3 neighbor relationship times out during a switchover, causing forwarding interruption.

3.40 passive-interface

Use this command to set the passive interface. Use the **no** form of this command to restore the default setting.

passive-interface { **default** | *interface-type interface-number* }

no passive-interface { **default** | *interface-type interface-number* }

Parameter Description

Parameter	Description
default	Sets all the interfaces to passive ones.
interface-type interface-number	Sets the specified interface to a passive one.

Defaults No passive interface is set by default.

Command Mode Routing process configuration mode

Usage Guide After an interface is set to a passive one, it no longer receives or sends the hello message.
This command applies to the interfaces participating in the OSPFv3 but not to the virtual links.

Configuration Examples The following example enables only the VLAN1 interface to participate in the OSPFv3 process.

```
passive-interface default
no passive-interface vlan 1
```

Related Commands

Command	Description
ipv6 ospf area	Configures an interface to participate in the OSPFv3 routing process.
show ipv6 ospf	Displays the OSPFv3 routing process information.
show ipv6 ospf neighbor	Displays the OSPFv3 neighbor information.

Platform Description N/A

3.41 redistribute

Use this command to start the route redistribution in order to import the routing information of other routing protocols to the OSPFv3 routing process. Use the **no** form of this command to restore the

default setting.

redistribute { **bgp** | **connected** | **isis** [*area-tag*] | **ospf** *process-id* | **rip** | **static** } [{ **level-1** | **level-1-2** | **level-2** } **| match** { **internal | external** [**1 | 2**] | **nssa-external** [**1 | 2**]**} | metric** *metric-value* **| metric-type** { **1** | **2** } | **route-map** *route-map-name* | **tag** *tag-value*]

no redistribute { **bgp** | **connected** | **isis** [*area-tag*] | **ospf** *process-id* | **rip** | **static** } [{ **level-1** | **level-1-2** | **level-2** } | **match** { **internal** | **external** [**1|2**] | **metric** | **metric-type** { *1|2* } | **route-map** *route-map-name* | **tag** *tag-value*]

Parameter Description

Parameter	Description
bgp	The bgp protocol is redistributed.
connected	The directly connected route is redistributed.
isis*[area-tag]*	The isis is redistributed. The area-tag specifies a particular isis instance.
ospf *process-id*	The ospf is redistributed. The process-id specifies a particular ospf instance within the range of 1-65535.
rip	The rip is redistributed.
static	The static route is redistributed.
level-1| **level-1-2**| **level-2**	It is used in the IS-IS route redistribution only and redistributes the routes at a specified level. .
match	It is used in the OSPFv3 route redistribution only and filters specific routes for redistribution; internal: inter-area and intra-area routes. external [1|2]: E1, E2 or all external routes. Nssa-external [1	2]: N1, N2 or all external routes of the NSSA area. All sub-type OSPFv3 routes are redistributed by default.
metric *metric-value*	Specifies the metric for the OSPFv3 external 2 LSA with metric-value. Its range is 0 to 16777214.
metric-type *{ 1|2 }*	Set the metric type for the external route to E-1 or E-2.
route-map *map-map-name*	Specifies the routing policy for route redistribution. The name of map-tag can be composed of up to 32 characters. No route-map is associated by default.
tag *tag-value*	Specifies the tag value redistributed to the OSPFv3 inner route, in the range of 0 to 4294967295.

Defaults The function is disabled by default;
Metric-type: 2;
Level-2 routes are redistributed in the ISIS redistribution
OSPFv3 routes of all sub-types are redistributed in the OSPFv3 redistribution
No route-map is associated

Command Mode Routing process configuration mode

Usage Guide

When a device supports multiple routing protocols, the coordination between these protocols becomes an important task. The device can run the protocols at the same time, so it should redistribute the protocols. This is applicable to all IP routing protocols.

The parameters level-1, level-2 or level-1-2 can be configured in the redistribution of the ISIS routes to indicate the level of the routes in the redistribution. By default, the level-2 ISIS routes are redistributed

When redistributing OSPFv3 routes, you can configure *match* to redistribute the routes.of the corresponding sub-type among the redistributed OSPFv3 routes. All types of OSPFv3 routes are redistributed by default.

The *match* parameter of route-map is specific to the source of routes. The parameters *tag*, *metric* and *metric-type* of the set rule of route-map take precedence over the ones configured for the redistribute command.

⚠ The metric value of the route-map associated should be in the range of 0 to 16777214. If the metric value is not in this range, the route cannot be introduced.

The rules for the **no** form of the **redistribute** command are as follows:

If some parameters are specified in the no command, restore their default settings;

If no parameters are specified in the **no** command, delete the whole command.

For example, if the configuration is made below:

Now modify the configuration with the command no redistribute isis 112 level-2

According to the above rules, the command only restores level-2 to default and level-2 is default per se, so after the above no command is executed, the configuration remains as

redistribute isis 112 level-2

To delete the whole command, use the command below

Configuration Examples

The following example redistributes the direct route and associates route-map test :

```
ipv6 router ospf 1
redistribute connect metric 10 route-map test
```

The associated route-map is configured as follows:

```
route-map test permit 10
match metric 20
set metric 30
```

The effect of the above configuration is to set the metric value which is 20 of the redistributed routes to 30, and that of other routes to 10

Related Commands

Command	Description
default-information originate	Sets the default route to be redistributed.
default-metric	Sets the default metric for the route to be redistributed.
summary-prefix	Sets the converged address range of the external route.
show ipv6 ospf	Displays the OSPFv3 routing process

	information.
show ipv6 ospf database	Displays the OSPFv3 link state database information.

Platform Description N/A

3.42 router-id

Use this command to set the router ID (device ID). Use the **no** form of this command to restore the default setting.

router-id *router-id*

no router-id

Parameter Description

Parameter	Description
router-id	ID of the device in the IPv4 address format.

Defaults The OSPFv3 routing process, the largest IPv4 address of all loopback interfaces is elected as the router ID; If there is no loopback interface with an IPv4 address, the OSPFv3 process will elect the largest IPv4 of all other interfaces as the router ID

Command Mode Routing process configuration mode

Usage Guide Each device that runs the OSPFv3 process shall be identified with a router ID. Router ID is in the format of IPv4 address.

Any IPv4 address can be set as the router ID, but the router ID of every routers in the AS must be unique. If multiple OSPFv3 processes are running on the same device, the router ID of every process must be unique. Note that the change of the router ID results in considerable processing work in the protocol. Therefore, it is not recommended to change any router ID without proper reason. A prompt will be given to ask whether you are sure to modify the router ID. It is recommended that you specify a router ID once an OSPFv3 process starts before configuring other parameters for the process

Configuration Examples The following example sets the ID of the device that participates in the OSPFv3 process to 1.1.1.1.

```
router-id 1.1.1.1
```

Related Commands

Command	Description
ipv6 ospf priority	Sets the interface priority.
show ipv6 ospf	Displays the OSPFv3 routing process information.

Platform N/A

Description

3.43 summary-prefix

Use this command to configure the converged route outside the OSPFv3 routing domain in the routing process configuration mode. Use the **no** form of this command to restore the default setting.
summary-prefix *ipv6-prefix*/*prefix-length* [**not-advertise** | **tag** < *0-4294967295* >]
no summary-prefix *ipv6-prefix*/*prefix-length* [**not-advertise** | **tag** < *0-4294967295* >]

Parameter Description

Parameter	Description
ipv6-prefix/*prefix-length*	Address range of the converged route
not-advertise	Does not advertise the converged route to neighbors. Absence of this parameter means to advertise.
tag<*0-4294967295*>	Tag value redistributed to the OSPFv3 inner route, in the range from 0 to 4294967295.

Defaults No converged route is configured by default.

Command Mode Routing process configuration mode.

Usage Guide When routes are redistributed by another routing process into the OSPFv3 routing process, every route is advertised to the OSPFv3-enabled device separately in the form of external link state. If the incoming routes are continuous addresses, the autonomous system border device can advertise only one converged route, thus reducing the scale of routing table greatly.
It is different from the **area range** command. The area range involves the convergence of routes between OSPFv3 areas, while the **summary-prefix** involves the convergence of external routes of the OSPFv3 routing domain.

Configuration Examples The following example configures the external route within the 2001:DB8::/64 to the converged route 2001:DB8::/64 to advertise it.

```
summary-prefix 2001 :DB8 : : /64
```

Related Commands

Command	Description
area-range	Configures route convergence between the OSPFv3 areas.
redistribute	Redistributes the routes in other routing process.

Platform Description N/A

3.44 show ipv6 ospf

Use this command to display the information of the OSPFv3 process.

show ipv6 ospf [*process-id*]

Parameter Description

Parameter	Description
process- id	OSPF process ID number.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the information about the OSPFv3 process.

```
Ruijie# show ipv6 ospf
Routing Process "OSPFv3 (1)" with ID 1.1.1.1
Process uptime is 24 minutes
Enable two-way-maintain
SPF schedule delay 5 secs, Hold time between SPFs 10 secs
Initial LSA throttle delay 0 msecs
Minimum hold time for LSA throttle 5000 msecs
Maximum wait time for LSA throttle 5000 msecs
Lsa Transmit Pacing timer 40 msecs, 1 LS-Upd
LSA interval 5 secs, Minimum LSA arrival 1000 msecs
Pacing lsa-group: 30 secs
Number of incomming current DD exchange neighbors 0/5
Number of outgoing current DD exchange neighbors 0/5
Number of external LSA 0. Checksum Sum 0x0000
Number of AS-Scoped Unknown LSA 0
Number of LSA originated 11
Number of LSA received 4
Log Neighbor Adjency Changes : Enabled
Number of areas in this router is 2
Area BACKBONE(0)
Number of interfaces in this area is 1(1)
SPF algorithm executed 4 times
Number of LSA 3.  Checksum Sum 0x1DDF1
Number of Unknown LSA 0
  Area 0.0.0.1 (NSSA)
      Number of interfaces in this area is 1(1)
      SPF algorithm executed 5 times
```

```
      Number of LSA 7.  Checksum Sum 0x445FE
      Number of Unknown LSA 0
NSSA Translator State is elected
```

Related Commands

Command	Description
ipv6 router ospf	Starts the OSPFv3 routing process.
default-information originate	Sets the default route to be redistributed.
default-metric	Sets the default metric for the route to be redistributed.
router-id	Sets the OSPFv3 routing process ID
timers spf	Sets the delay and the minimum and maximum intervals for the OSPFv3 to perform SPF calculation after receiving the topology change information.

Platform Description N/A

3.45 show ipv6 ospf database

Use this command to display the database information of the OSPFv3 process

show ipv6 ospf [*process- id*] **database** [**lsa-type** [**adv-router** *router-id*]]

Parameter Description

Parameter	Description
process- id	OSPF process ID number
lsa-type	The LSA types are as follows: NSSA-external-LSA, AS-external-LSAs, Link-LSAs, Inter-Area-Prefix-LSAs, Inter-Area-Router-LSAs, Intra-Area-Prefix-LSAs, Network-LSAs, Router-LSAs If this parameter is not specified, all LSA information will be displayed.
adv-router *router-id*	Displays the LSA information generated by the specified router.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration The following example displays the information about the OSPFv3 process database.

Examples

```
Ruijie# show ipv6 ospf database
OSPFv3 Router with ID (1.1.1.1) (Process 1)
Link-LSA (Interface FastEthernet 1/0)
Link State ID   ADV Router     Age  Seq#      CkSum  Prefix
0.0.0.2         1.1.1.1        197 0x80000001 0x7cd8     0
0.0.0.5         2.2.2.2        206 0x80000001 0x8c86     0
              Link-LSA (Interface Loopback 1)
Link State ID   ADV Router     Age  Seq#      CkSum  Prefix
0.0.64.1        1.1.1.1         82 0x80000001 0xb760     0
              Router-LSA (Area 0.0.0.0)
Link State ID   ADV Router     Age  Seq#      CkSum   Link
0.0.0.0         1.1.1.1      17 0x80000006 0x62a1     1
0.0.0.0         2.2.2.2        156 0x80000003 0x8653     1
              Network-LSA (Area 0.0.0.0)
Link State ID   ADV Router     Age  Seq#      CkSum
0.0.0.5         2.2.2.2        157 0x80000001 0xf8f6
              Router-LSA (Area 0.0.0.1)
Link State ID   ADV Router     Age  Seq#      CkSum   Link
0.0.0.0         1.1.1.1         17 0x80000002 0x0529     0
              Inter-Area-Prefix-LSA (Area 0.0.0.1)
Link State ID   ADV Router     Age  Seq#      CkSum
0.0.0.1         1.1.1.1         77 0x80000002 0x83b4
AS-external-LSA
Link State ID   ADV Router     Age  Seq#      CkSum
0.0.0.1         1.1.1.1         1 0x80000001 0x6035 E2
```

Related Commands

Command	Description
ipv6 router ospf	Starts the OSPFv3 routing process.

Platform Description

N/A

3.46 show ipv6 ospf interface

Use this command to display the OSPFv3 interface information.

show ipv6 ospf [*process- id*] **interface** [*interface-type interface-number* | **brief**]

Parameter Description

Parameter	Description
interface-type interface-number	Specifies the interface type and interface number.
process- id	OSPFv3 process ID
brief	Displays the interface summary.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the information about the OSPFv3 interface.

```
Ruijie# show ipv6 ospf interface
FastEthernet 1/0 is up, line protocol is up
Interface ID 2
IPv6 Prefixes
fe80::2d0:22ff:fe22:2223/64 (Link-Local Address)
OSPFv3 Process (1), Area 0.0.0.0, Instance ID 0
Router ID 1.1.1.1, Network Type BROADCAST, Cost: 1
Transmit Delay is 1 sec, State BDR, Priority 1
Designated Router (ID) 2.2.2.2
Interface Address fe80::c800:eff:fe84:1c
Backup Designated Router (ID) 1.1.1.1
Interface Address fe80::2d0:22ff:fe22:2223
Timer interval configured, Hello 10, Dead 40, Wait 40, Retransmit 5
Hello due in 00:00:02
Neighbor Count is 1, Adjacent neighbor count is 1
Hello received 26 sent 26, DD received 5 sent 4
LS-Req received 1 sent 1, LS-Upd received 3 sent 6
LS-Ack received 6 sent 2, Discarded 0
```

If the BFD has been enabled for the neighbor on the interface, the content of “BFD enabled” is also displayed. For example:

```
Ruijie# show ipv6 ospf interface
FastEthernet 1/0 is up, line protocol is up
Interface ID 2
IPv6 Prefixes
fe80::2d0:22ff:fe22:2223/64 (Link-Local Address)
OSPFv3 Process (1), Area 0.0.0.0, Instance ID 0
Router ID 1.1.1.1, Network Type BROADCAST, Cost: 1
Transmit Delay is 1 sec, State BDR, Priority 1, BFD enabled
Designated Router (ID) 2.2.2.2
Interface Address fe80::c800:eff:fe84:1c
Backup Designated Router (ID) 1.1.1.1
Interface Address fe80::2d0:22ff:fe22:2223
Timer interval configured, Hello 10, Dead 40, Wait 40, Retransmit 5
Hello due in 00:00:02
Neighbor Count is 1, Adjacent neighbor count is 1
```

```
Hello received 26 sent 26, DD received 5 sent 4
LS-Req received 1 sent 1, LS-Upd received 3 sent 6
LS-Ack received 6 sent 2, Discarded 0
```

Related Commands

Command	Description
ipv6 router ospf	Starts the OSPFv3 routing process.
ipv6 ospf area	Enables the interface to participate in the OSPFv3 process.

Platform Description N/A

3.47 show ipv6 ospf neighbor

Use this command to display the neighbor information of the OSPFv3 process.

show ipv6 ospf [*process- id*] **neighbor** [**interface-type** *interface-number* [**detail**]| *neighbor-id* |**detail**]

Parameter Description

Parameter	Description
process- id	OSPFv3 process ID number
detail	Displays details about the neighbor.
interface-type *interface-number*	Interface type and interface number
neighbor-id	Neighbor's router ID

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following command displays the brief information about the OSPFv3 neighbor.

```
Ruijie# show ipv6 ospf neighbor
OSPFv3 Process (1), Neighbores, 1 is Full:
Neighbor ID     Pri   State           Dead Time   Interface          Instance
ID
2.2.2.2          1   Full/DR         00:00:33    FastEthernet 1/0     0
```

The following command displays the details of OSPFv3 neighbors:

```
Ruijie# show ipv6 ospf neighbor detail
Neighbor 2.2.2.2, interface address fe80::c800:eff:fe84:1c
   In the area 0.0.0.0 via interface FastEthernet 1/0
```

```
   Neighbor priority is 1, State is Full, 6 state changes
   DR is 2.2.2.2 BDR is 1.1.1.1
   Options is 0x000013 (-|R|-|-|E|V6)
   Dead timer due in 00:00:36
   Database Summary List 0
   Link State Request List 0
Link State Retransmission List 0
```

If the BFD has been enabled for the forwarding path of the neighbor , the content of “BFD session state up” is added to the information displayed. For example:

```
Ruijie# show ipv6 ospf neighbor detail
Neighbor 2.2.2.2, interface address fe80::c800:eff:fe84:1c
   In the area 0.0.0.0 via interface FastEthernet 1/0
   Neighbor priority is 1, State is Full, 6 state changes
   DR is 2.2.2.2 BDR is 1.1.1.1
   Options is 0x000013 (-|R|-|-|E|V6)
   Dead timer due in 00:00:36
   Database Summary List 0
   Link State Request List 0
Link State Retransmission List 0
   BFD session state up
```

Related Commands

Command	Description
ipv6 router ospf	Starts the OSPFv3 routing process.
ipv6 ospf area	Enables the interface to participate in the OSPFv3 process.
area virtual-link	Configures the OSPFv3 virtual link.
show ipv6 ospf interface	Displays the OSPFv3 interface information.

Platform Description N/A

3.48 show ipv6 ospf restart

Use this command to display the OSPFv3 graceful restart configuration.

show ipv6 ospf [*process- id*] **restart**

Parameter Description

Parameter	Description
process- id	OSPFv3 process ID number.

Defaults N/A

Command Privileged EXEC mode

Mode

Usage Guide N/A

Configuration Examples The following example displays the restarter status.

```
Ruijie# show ipv6 ospf restart
Routing Process is ospf 1
Graceful-restart enabled
Restart grace period 120 secs
Current Restart status is plannedRestart
Current Restart remaining time 50 secs
Graceful-restart helper support enabled
```

The following example displays the helper status.

```
Ruijie# show ipv6 ospf restart
Routing Process is ospf 1
Neighbor 10.1.1.2, interface addr 10.1.1.2
In the area 0.0.0.0 via interface GigabitEthernet 6/0/0
Graceful-restart helper enabled
Current helper status is helping
Current helper remaining time 50 secs
```

Related Commands

Command	Description
ipv6 router ospf	Starts the OSPFv3 routing process.

Platform Description N/A

3.49 show ipv6 ospf route

Use this command to display the OSPFv3 route information.

show ipv6 ospf [*process- id*] **route** [**count**]

Parameter Description

Parameter	Description
process- id	OSPFv3 process ID number.
count	Total number of OSPFv3 routes

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the information about OSPFv3 routes.

```
Ruijie# show ipv6 ospf route
OSPFv3 Process (1)
Codes: C - connected, D - Discard, O - OSPF, IA - OSPF inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2Destination
Metric   Next-hop
E2 2001:DB8:1::/64   1/20    via fe80::c800:eff:fe84:1c, FastEthernet 1/0
O  2001:DB8:2::/64   11      via fe80::c800:eff:fe84:1c, FastEthernet 1/0,
Area 0.0.0.0
```

Related Commands

Command	Description
ipv6 router ospf	Starts the OSPFv3 routing process.

Platform Description N/A

3.50 show ipv6 ospf summary-prefix

Use this command to display the external route convergence information of OSPFv3

show ipv6 ospf [*process- id*] **summary-prefix**

Parameter Description

Parameter	Description
process- id	OSPFv3 process ID number

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the external route convergence information of OSPFv3.

```
Ruijie# show ipv6 ospf summary-prefix
OSPFv3 Process 1, Summary-prefix:
2001:db8::/64,Metric 16777215,Type0,Tag0,Match count0,advertise
```

Related Commands

Command	Description
ipv6 router ospf	Starts the OSPFv3 routing process.

summary-prefix	Configures the converge route outside the OSPFv3 routing domain.

Platform Description N/A

3.51 show ipv6 ospf topology

Use this command to display the topology information about each area of OSPFv3.

show ipv6 ospf [*process- id*] **topology** [**area** *area-id*]

Parameter Description

Parameter	Description
process- id	OSPFv3 process ID number
area-id	Area ID

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following command displays the topology information about each area of OSPFv3.

```
Ruijie# show ipv6 ospf topology
OSPFv3 Process (1)
OSPFv3 paths to Area (0.0.0.0) routers
Router ID       Bits  Metric    Next-Hop
Interface
1.1.1.1          EB  --
2.2.2.2          E   1        2.2.2.2
FastEthernet 1/0

OSPFv3 paths to Area (0.0.0.1) routers
Router ID       Bits  Metric    Next-Hop
Interface
1.1.1.1          B   --
```

1 Related Commands

Command	Description
ipv6 router ospf	Starts the OSPFv3 routing process.
area range	Configures the address range of the OSPF area.

Platform Description N/A

3.52 show ipv6 ospf virtual-links

Use this command to display the virtual link information of the OSPFv3 process

show ipv6 ospf [*process- id*] **virtual-links**

Parameter Description

Parameter	Description
process- id	OSPFv3 process ID number

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following command displays the information about the OSPFv3 virtual link.

```
Ruijie# show ipv6 ospf virtual-links
Virtual Link VLINK1 to router 2.2.2.2 is down
  Transit area 0.0.0.1 via interface FastEthernet 1/0, instance ID 0
  Local address *
  Remote address 3333::1/128
  Transmit Delay is 1 sec, State Down,
  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
    Hello due in inactive
    Adjacency state Down
```

Related Commands

Command	Description
ipv6 router ospf	Starts the OSPFv3 routing process.
area virtual-link	Configures the OSPFv3 virtual link.
show ipv6 ospf neighbor	Displays the OSPFv3 neighbor information.

Platform Description N/A

3.53 timers lsa arrival

Use this command to configure a delay for receiving repeated LSAs. Use the **no** form of this command to restore the default setting.

timers lsa arrival *arrival-time*
no timers lsa arrival

Parameter Description

Parameter	Description
arrival-time	Specifies the delay for receiving repeated LSAs. The range is from 0 to 600000 in the unit of milliseconds.

Defaults The default is 1000.

Command Mode Routing process configuration mode

Usage Guide Configure the device not to process repeated LSAs received within the specific delay.

Configuration Examples The following example sets the delay for receiving repeated LSAs to 2 seconds.

```
Ruijie(config)# ipv6 router ospf 1
Ruijie(config-router)# timers lsa arrival 2000
```

Related Commands

Command	Description
show ipv6 ospf	Displays OSPFv3 process information, including identifiers of routing devices.

Platform Description N/A

3.54 timers pacing lsa-group

Use this command to set an LSA group pace interval. Use the **no** form of this command to restore the default setting.
timers pacing lsa-group *seconds*
no timers pacing lsa-group

Parameter Description

Parameter	Description
seconds	Specifies the LSA group pace interval. The range is from 10 to 1800 in the unit of seconds. The default value is 30.

Defaults The default is 30.

Command Mode Routing process configuration mode

Usage Guide Each LSA has its own lifetime, that is, LSA aging time. An LSA existing for 1800s will be refreshed so that the living time of the LSA will not exceed its aging time. This ensures that normal LSAs are not cleared due to timeout of aging time. If update and aging operations of each LSA are separately computed, a large number of CPU resources will be consumed.

To effectively utilize CPU resources, configure the device to group LSAs for uniform refreshment. The time for refreshing a group of LSAs is called an LSA group pace interval. Grouping refreshment is to put the LSAs to be refreshed within an LSA group pace interval into a group and refresh them uniformly.

When the number of LSAs is fixed, a longer LSA group pace interval will allow the CPU to process more LSAs when the timer expires for one time. To keep the stability of the CPU, you are recommended not to set an over long LSA group pace interval. This prevents the CPU from processing excessive LSAs when the timer expires each time. If the CPU processes a large number of LSAs each time, it is recommended to shorten the LSA group pace interval. For example, if the database has 10000 LSAs, you need to reduce the LSA group pace interval. If it has only 40 to 100 LSAs, you can adjust the group pace interval to 10 through 20 minutes.

Configuration Examples The following example sets the LSA group pace interval to 120 seconds.

```
Ruijie(config)# ipv6 router ospf 1
Ruijie(config-router)#timers pacing lsa-group 120
```

Related Commands

Command	Description
show ipv6 ospf	Displays OSPFv3 configuration information.

Platform Description N/A

3.55 timers pacing lsa-transmit

Use this command to set an interval for sending LSA groups. Use the **no** form of this command to restore the default setting.

timers pacing lsa-transmit *transmit-time transmit-count*

no timers pacing lsa-transmit

Parameter Description

Parameter	Description
transmit-time	Specifies the interval for sending LSA groups. The range is from 10 to 1000 in the unit of milliseconds.
transmit-count	Specifies the number of LS-UPD packets in an LSA group. The range is from 1 to 200.

Defaults The default transmit-time is 40 and the transmit-count is 1.

Command Routing process configuration mode

Mode

Usage Guide There are usually a lot of LSAs on a network; therefore, the load of the device is very high. Setting proper **transimit-time** and **transimit-count** values can restrict flooding of LS-UPD packets on the network.
When the CPU load is not high and network bandwidth usage is not large, you can reduce the **transimit-time** value and increase the **transimit-count** value to accelerate route convergence.

Configuration Examples The following example sets the interval for sending LS-UPDs to 50 milliseconds and the specified 20 packets to be sent each time.

```
Ruijie(config)# ipv6 router ospf 1
Ruijie(config-router)# timers pacing lsa-transmit 50 20
```

Related Commands

Command	Description
show ipv6 ospf	Displays OSPFv3 process information.

Platform Description N/A

3.56 timers spf

Use this command to set the delay and interval for the OSPFv3 to calculate SPF after receiving the topology change. Use the **no** format of this command to restore the default setting.
timers spf *delay holdtime*
no timers spf

Parameter Description

Parameter	Description
spf-delay	Defines the waiting time for the SPF calculation, which ranges from 0 to 2147483647 seconds. After receiving the topology change information, the OSPF routing process has to waiting for a given period before making the SPF calculation.
spf-holdtime	Defines the interval between two SPF calculations, which ranges from 0 to 2147483647 seconds. If the interval has not passed even if the waiting time has elapsed, no SPF calculation can be made yet.

Defaults There are two default situations: 1. The versions earlier than RGOS 10.4 do not support the command **timers throttle spf**. The system default is timers spf 5 10. 2. The RGOS 10.4 and the later versions do support the command **timers throttle spf**, where **timer spf** takes no effect by default. The delay for SPF calculation is subject to the default setting of the command **timers throttle spf**. Refer to the description of the command.

Command Routing process configuration mode

Mode

Usage Guide The smaller the *spf-delay* and *spf-holdtime*, the shorter time the OSPF takes to adapt to the topology change, but the more CPU time will be used of the router.

The **timer spf** configuration and the **timers throttle spf** configuration will overwrite each other.

Configuration Examples The following example sets the delay and holdtime of the OSPFv3 to 3 seconds and 9 seconds respectively.

```
Ruijie(config)# ipv6 router ospf 20
Ruijie(config-router)# timers spf 3 9
```

Related Commands

Command	Description
clear ipv6 ospf	Restarts part of the function of the OSPFv3.
show ipv6 ospf	Displays the OSPFv3 routing process information.
timers throttle spf	Configures the exponential backoff delay of the SPF calculation

Platform Description N/A

3.57 timers throttle lsa all

Use this command to configure an exponential backoff algorithm for generating LSAs. Use the **no** form of this command to restore the default setting.

timers throttle lsa all *delay-time hold-time max-wait-time*

no timers throttle lsa all

Parameter Description

Parameter	Description
delay-time	Specifies a shortest LSA generation delay, in milliseconds (the first batch of LSAs is usually generated immediately). The range is from 0 to 600000 in the unit of milliseconds.
hold-time	Specifies a shortest interval between the first two times of LSA refreshment, in milliseconds. The range is from 1 to 600000 in the unit of milliseconds
max-wait-time	Specifies a longest interval for consecutive two times of LSA refreshment, in milliseconds. The value is used to determine whether LSAs are refreshed consecutively. The range is from 1 to 600000 in the unit of milliseconds.

Defaults The default *delay-time* is 0, *hold-time* is 5000 and *max-wait-time* is 5000.

Command Mode Routing process configuration mode

Usage Guide If high route convergence capability is needed when links are changed, set a small *delay-time* value. To reduce CPU consumption, you can properly increase the values of the parameters.

The *hold-time* value cannot be smaller than the *delay-time* value and must be smaller than or equal to the *max-wait-time* value.

Configuration Examples The following example sets *delay-time* to 10 milliseconds, *hold-time* to one second, and *max-wait-time* to five seconds.

```
Ruijie(config)# ipv6 router ospf 1
Ruijie(config-router)# timers throttle lsa all 10 1000 5000
```

Related Commands

Command	Description
show ipv6 ospf	Displays OSPFv3 process information.

Platform Description N/A

3.58 timers throttle route

Use this command to configure the delay time of route calculation on receiving the ASBR summary LSA and the external summary LSA. Use the **no** form of this command to restore the default setting.

timers throttle route { **inter-area** *ia-delay* | **ase** *ase-delay* }

no timers throttle route { **inter-area** | **ase** }

Parameter Description

Parameter	Description
inter-area	Calculates the inter area routes.
ia-delay	Sets the delay time of the inter-area route calculation, in the range from 0 to 600000 in the unit of milliseconds. On receiving the ASBR summary LSA, the router will not calculate the inter-area routes until the ia-delay time runs out.
ase	Calculates the external routes.
ase-delay	Sets the delay time of the external route calculation, in the range from 0 to 600000 in the unit of milliseconds. On receiving the external summary LSA, the router will not calculate the external routes until the ase-delay time runs out.

Defaults The default *ia-delay* is 0 and *ase-delay* is 0.

Command Mode Routing process configuration mode

Usage Guide The default setting is recommended if the network needs to be fast converged. For the instable network where multiple inter-area and external routes exist, if you want to optimize the route calculation and save the CPU resources, increase the delay time.

Configuration Examples The following example sets the delay time of the inter-area route calculation to one second.

```
Ruijie(config)# ipv6 router ospf 1
Ruijie(config-router)# timers throttle route inter-area 1000
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.59 timers throttle spf

Use this command to configure, the delay for SPF calculation as well as the minimum and maximum intervals between two SPF calculations after receiving the topology change information for OSPFv3 in the routing process configuration mode. Use the **no** form of this command to restore the default setting.

timers throttle spf *spf-delay spf-holdtime spf-max-waittime*

no timers throttle spf

Parameter Description

Parameter	Description
spf-delay	Specifies an SPF calculation delay after the topology change information is received. The range is from 1 to 600000 in the unit of milliseconds.
spf-holdtime	Specifies a shortest interval between two SPF calculations. The range is from 1 to 600000 in the unit of milliseconds.
spf-max-waittime	Specifies a longest interval between two SPF calculations. The range is from 1 to 600000 in the unit of milliseconds.

Defaults The default *spf-delay* is 1000. *spf-holdtime* is 5000 and *spf-max-waittime* is 10000.

Command Mode Routing process configuration mode.

Usage Guide *Spf-delay* refers to the delay from the topology change to the SPF calculation. *Spf-holdtime* refers to

the minimum interval between the first and the second SPF calculations. Then, the interval of the consecutive SPF calculations is at least twice as the last interval till it reaches to *spf-max-waittime*. If the interval between two SPF calculations has exceeded the required minimum value, the interval of SPF calculation will re-start from *spf-holdtime*.

Smaller *spf-delay* and *spf-holdtime* value can make the topology convergence faster. Greater *spf-max-waittime* value can reduce the SPF calculations. Those configuration are flexible according to the actual stability of the network topology.

Compared with the timers spf command, this command is more flexible. It not only speeds up the SPF convergence calculation, but also reduces the system resources consumption of SPF calculation as the topology changes continuously. Therefore, the timers throttle spf command is recommended.

- The spf-holdtime cannot be smaller than spf-delay, or the spf-holdtime will be set to be equal to spf-delay;
- The spf-max-waitime cannot be smaller than spf-holdtime, or the spf-max-waittime will be set to be equal to spf-holdtime automatically;
- The configuration of the timers spf command and of the timers throttle spf command are overwritten each other.
- With neither timers spf command nor timers throttle spf command configured, the default value refers to the default of the timers throttle spf command

Configuration Examples

The following example configures the delay and holdtime and the maximum time interval of the OSPFv3 as 5ms, 1000ms and 90000ms respectively. If the topology changes consecutively, the time for SPF calculation is: five milliseconds, one second, three seconds, seven seconds, 15 seconds, 31 seconds, 63 seconds, 89 seconds, 179 seconds, 179+90 seconds……

```
Ruijie(config)# ipv6 router ospf 20
Ruijie(config-router)# timers spf 5 1000 90000
```

Related Commands

Command	Description
clear ipv6 ospf	Restarts part of the OSPFv3 function.
show ipv6 ospf	Displays the routing process information of the OSFPv3
timers spf	Configures the SPF calculation delay .

Platform Description

N/A

3.60 two-way-maintain

Use this command to enable two-way OSPFv3 maintenance. Use the **no** form of this command to disable this function.

two-way-maintain

no two-way-maintain

Parameter Description

Parameter	Description
N/A	N/A

Defaults Two-way OSPFv3 maintenance is enabled by default.

Command Mode Routing process configuration mode

Usage Guide Sometimes, there are a lot of sent and received packets on a network, occupying large CPU and memory resources. As a result, some packets cannot be processed immediately or are directly lost. If hello packets from a neighbor cannot be processed within the dead interval of neighbors, the connection with the neighbor will be interrupted due to connection timeout. If two-way OSPFv3 maintenance is enabled and a large number of packets exist on the network, besides hello packets, the two-way neighboring relationship between the device and the neighbor can also be maintained by DD, LSU, LSR, and LSAck packets from the neighbor. This prevents the neighboring relationship from failing due to receiving delay or discarding of hello packets.

Configuration Examples The following example disables two-way OSPFv3 maintenance.

```
Ruijie(config)# ipv6 router ospf 1
Ruijie(config-router)# no two-way-maintain
```

Related Commands

Command	Description
show ipv6 ospf	Displays global OSPFv3 configuration information.

Platform Description N/A

4 IS-IS Commands

4.1 address-family ipv6

Use this command to enter the **address-family ipv6** mode. Use the **no** form of this command to delete all configurations in the **address-family ipv6**.

address-family ipv6 [*unicast*]

no address-family ipv6 [*unicast*]

Parameter Description

Parameter	Description
unicast	IPv6 unicast address prefix.

Defaults By default, no address-family ipv6 is configured.

Command Mode IS-IS routing process configuration mode

Usage Guide This command is used for the IPv6 special configurations.

To exit to the IS-IS routing process configuration mode, use the **exit-address-family** command.

Configuration Examples

```
Ruijie(config)# router isis
Ruijie(config-router)# address-family ipv6 unicast
```

Related Commands

Command	Description
exit-address-family	Exits the address-family ipv6 mode.

Platform Description N/A

4.2 adjacency-check

Use this command to detect protocols supported by the adjacency in the Hello packets. Use the **no** form of this command is to cancel this detection.

adjacency-check

no adjacency-check

Parameter Description

Parameter	Description

N/A	N/A

Defaults By default, this detection is enabled.

Command Mode IS-IS routing process configuration mode or address-family ipv6 mode

Usage Guide N/A

Configuration Examples

```
Ruijie(config)# router isis
Ruijie(config-router)# adjacency-check
Ruijie(config-router)# address-family ipv6
Ruijie(config-router-af)# adjacency-check
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.3 area-password

Use this command to set the plain-text authentication password for the Level-1 area. Use the **no** form of this command to cancel the password set.

area-password *password-string* [**send-only**]

no area-password [**send-only**]

Parameter Description

Parameter	Description
password-string	Character string of the plaintext authentication password with the longest length being 254 characters..
send-only	Specifies the plaintext authentication password of Level-1 area applicable to the packets sent only, but not to the packets received.

Defaults By default, no authentication password is set.

Command Mode IS-IS routing process configuration mode

Usage Guide IS-IS routing process configuration mode

Configure this command to perform the authentication on the LSP, CSPN and PSNP packets received in the Level-1 domain and send the packets taking with the authentication information. In the same area, all IS-IS devices must be configured the same password.

If the **authentication mode** command has been executed, this command will not be configured successfully. You need to delete the **authentication mode** command first.
Running the **no area-password send-only** command can only disable the **send-only** option.

Configuration Examples The following example specifies the authentication in the IS-IS area using the plaintext mode with the password being *redgiant* and the password applicable to the packets sent only, but not to the packets received.

```
Ruijie(config)# router isis
Ruijie(config-router)# area-password redgiant send-only
```

Related Commands

Command	Description
domain-password	Sets the Level-2 domain password.
authentication mode	Specifies the IS-IS authentication mode.

Platform Description N/A

4.4 authentication key-chain

Use this command to specify the key-chain used by the IS-IS authentication. Use the **no** form of this command to cancel the key-chain specified.
authentication key-chain *name-of-chain* [**level-1** | **level-2**]
no authentication key-chain *name-of-chain* [**level-1** | l**evel-2**]

Parameter Description

Parameter	Description
name-of-chain	Key-chain name with the maximum length being 255.
level-1	Specifies the authentication key-chain of the Level-1.
level-2	Specifies the authentication key-chain of the Level-2.

Defaults By default, the authentication key-chain is not specified.

Command Mode N/A

Usage Guide If the **key chain** command is not used to configure the corresponding key-chain, the authentication will not be performed. In addition, to make the IS-IS key-chain authentication effective, you need to configure the **authentication mode** command at the same time.
This key-chain can apply to the plain-text authentication mode and MD5 encrypted authentication mode. You can use the **authentication mode** command to set the authentication mode.
The length of the password key-string in the key-chain shall not be larger than 80 characters if the plain-text authentication mode is used, otherwise this configuration will fail.
Only one key-chain is used at one time. So, when configuring this command, the said key-chain will

be replaced by the new specified one.
If the Level is not specified, the key-chain will apply to both Level-1 and Level-2.
The key-chain specified by this command works on the LSP,CSNP and PSNP packets. The IS-IS will send or receive the password that belongs to this key-chain.
There may contain multiple passwords in the key-chain. When sending the packets, use the password with small number first. While receiving the packets, the packet will be received as long as the password of this packet received corresponds to any password in the key-chain.

Configuration Examples The following example specifies the authentication in the IS-IS area using the key-chain named *kc*:

```
Ruijie(config)# router isis
Ruijie(config-router)# authentication key-chain kc level-1
```

Related Commands

Command	Description
authentication mode	Specifies the IS-IS authentication mode.
authentication send-only	Specifies the IS-IS authentication applicable to the sent packets only, but not to packets received.
key-chain	Configures the key-chain.

Platform Description N/A

4.5 authentication mode

Use this command to specify the mode of IS-IS authentication. Use the **no** form of this command to cancel the specified IS-IS authentication mode.
authentication mode { **md5** | **text** } [**level-1** | **level-2**]
no authentication mode { **md5** | **text** } [**level-1** | **level-2**]

Parameter Description

Parameter	Description
md5	Specifies the MD5 authentication mode to use.
text	Specifies the plain-text authentication mode to use.
level-1	Specifies the authentication mode taking effect on the Level-1.
level-2	Specifies the authentication mode taking effect on the Level-2.

Defaults By default, the authentication mode is not specified.

Command Mode IS-IS routing process configuration mode

Usage Guide To make the key-chain configured by the **authentication key-chain** command effective, you must use the **authentication mode** command to specify the authentication mode.

If no Level is specified, the authentication mode specified is applicable to both Level-1 and Level-2.
When configuring the **authentication mode** command, if the **area-password** or **domain-password** command has been executed to configure the plaintext authentication before, the said commands will be overwritten by the new command..
If the **authentication mode** command has been configured, the **area-password** or **domain-password** will not be configured successfully, you need to delete the **authentication mode** command first.

Configuration Examples The following example specifies authentication in the IS-IS area to be the MD5 authentication mode.

```
Ruijie(config)# router isis
Ruijie(config-router)# authentication mode md5 level-1
```

Related Commands

Command	Description
area-password	Sets the area plaintext authentication password.
authentication key-chain	Specifies the key-chain used by the IS-IS authentication.
authentication send-only	Specifies the IS-IS authentication applicable to the packets sent only, but not to the packets received.
domain-password	Sets the domain plaintext authentication password.

Platform Description N/A

4.6 authentication send-only

Use this command to specify the IS-IS authentication only applicable to the packets sent, but not to the packets received. Use the **no** form of this command to perform the authentication on the packets received.
authentication send-only [**level-1** | **level-2**]
no authentication send-only [**level-1** | **level-2**]

Parameter Description

Parameter	Description
level-1	Specifies setting **send-only** on the Level-1.
level-2	Specifies setting **send-only** on the Level-2.

Defaults By default, this command is not configured. If the IS-IS authentication is configured, the authentication will be performed on the packets both sent and recieved.

Command IS-IS routing process configuration mode

Mode

Usage Guide With this command configured, the IS-IS will set the authentication password in the packets sent, however, the authentication will not be performed on the packets received. It can apply to the following two occasions: 1. before deploying the IS-IS authentication for all devices in the network. 2. before changing the authentication password or authentication mode. Before the above two tasks start, you need to configure the **authentication send-only** command first to make each device perform no authentication on the packets received, so as to avoid the network oscillation caused during the subsequent authentication password deployment. After the deployment of the entire network authentication finished, execute the **no isis authentication send-only** command to cancel the **send-only** authentication mode.
This command can apply to the plain-text authentication mode and MD5 authentication mode. You can use the **authentication mode** command to set the authentication mode.
If the Level is not specified, the authentication mode specified is applicable to both Level-1 and Level-2.

Configuration Examples The following example specifies the authentication in the IS-IS area to be the **send-only** mode.

```
Ruijie(config)# router isis
Ruijie(config-router)# authentication send-only level-1
```

Related Commands

Command	Description
authentication key-chain	Specifies the IS-IS authentication key-chain.
authentication mode	Specifies the mode of IS-IS authentication.
key-chain	Configures the key-chain.

Platform Description N/A

4.7 bandwidth-reference

Use this command to configure the bandwidth reference for IS-IS. Use the **no** form of this command to restore the default settings.
bandwidth-reference value
no bandwidth-reference

Parameter Description

Parameter	Description
value	Indicates the bandwidth value. The value ranges from **1** to **4294967**, in the unit of Mbps. The default value is **100**.

Defaults The default value is **100**.

Command IS-IS routing process configuration mode

Mode

Usage Guide Use this command to calculate the interface metric in an instance according to the bandwidth reference configured in the instance. If a metric is configured, the metric prevails.

Configuration Examples The following example configures the bandwidth reference for IS-IS to automatically calculate the link metric.

```
Ruijie(config)# router isis
Ruijie(config-router)# bandwidth-reference 200
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.8 bfd all-interfaces

Use this command to configure all interfaces running the IS-IS protocol to conduct BFD link detection.
bfd all-interfaces [**anti-congestion**]

Use the **no** form of this command to configure all interfaces running the IS-IS protocol to not conduct BFD link detection.
no bfd all-interfaces [**anti-congestion**]

Parameter Description

Parameter	Description
anti-congestion	IS-IS BFD anti-flapping option

Defaults The IS-IS support for BFD is disabled on all interfaces by default.

Command Mode IS-IS routing process configuration mode

Default Level 14

Usage Guide There are two methods for enabling or disabling the IS-IS support for BFD on interfaces.
Method 1: In IS-IS routing process configuration mode, run the [**no**] **bfd all-interfaces** [**anti-congestion**] command to enable or disable the IS-IS support for BFD on all interfaces running the IS-IS protocol.
Method 2: In interface configuration mode, run the **isis bfd** [**disable | anti-congestion**] command to

enable or disable the IS-IS support for BFD on a specified interface.

In normal cases, the BFD function enables to send detection packets to detect the link status at an interval of several milliseconds. When a link exception such as link interruption occurs, the BFD function enables to rapidly detect the link exception, and notify a device running the IS-IS protocol to delete neighbors and delete neighbor availability information from LSP packets. The device running the IS-IS protocol performs route re-calculation and generates a new route, to bypass the failure link, thereby implementing fast convergence. With the introduction of some new technologies such as the Multi-Service Transport Platform (MSTP), link congestion easily occurs in peak hours. When congestion occurs, the BFD function allows to rapidly detect a link exception, notify a device running the IS-IS protocol to delete a neighbor and delete neighbor availability information from LSP packets, and perform link switching to bypass the congested link. The interval for an IS-IS neighbor to send a Hello detection packet is 10 seconds and the timeout time is 30 seconds. When an exception is detected via the BFD function, IS-IS Hello packets can be normally received, an IS-IS neighbor relationship can be rapidly established, and the route is restored to pass the congested link. Then, BFD is performed again. If there is still a link exception, link switching is performed again, and the process repeats. The route switches between the congested link and other links and flapping occurs.

The anti-flapping function can be enabled to prevent route flapping in the case of link congestion. After the anti-flapping function is enabled, if a link is congested, the IS-IS neighbor status keeps alive but the neighbor availability information in LSP packets is deleted, and the route switches to a non-congested link. After the link is restored, that is, congestion is removed, the neighbor availability information is restored in LSP packets, and the route switches back to the originally congested link, thereby preventing route flapping.

When IS-IS anti-flapping is enabled, the BFD anti-flapping command (**bfd up-dampening**) must be configured on an interface. The two commands must be configured simultaneously. If only one of them is configured, the anti-flapping function does not take effect or a network exception is incurred.

For details about how to enable the BFD anti-flapping function on an interface, see the configuration example of the ISIS BFD command.

- Before the IS-IS support for BFD is configured, a BFD session must be configured on an interface.
- When the BFD anti-flapping command is configured on an interface, if the IS-IS support for BFD is already configured on the interface, the anti-flapping function must be enabled for a device running the IS-IS protocol.
- When the IS-IS anti-flapping option is configured, the BFD anti-flapping command must be configured on an interface.

Configuration Examples

The following example configures all interfaces running the IS-IS protocol to conduct BFD.

```
Ruijie(config)# router isis 123
Ruijie(config-router)# bfd all-interface
```

4.9 clear clns neighbors

Use this command to clear all IS-IS neighbor relation tables.

clear clns neighbors

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used in the condition of needing to refresh the IS-IS neighbor relation table immediately.

Configuration Examples

```
Ruijie# clear clns neighbors
```

Related Commands

Command	Description
clear isis	Clears all IS-IS data structure.

Platform Description N/A

4.10 clear isis *

Use this command to clear the data structure of all IS-ISs.

clear isis *

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used in the condition of needing to refresh the LSP immediately. For example, after executing the **area-password** and **domain-password** commands, the previous LSPs still exist in this router, you can use this command to clear these LSPs.

Configuration Examples

```
Ruijie# clear isis *
```

Related

Command	Description

Commands

clear clns neighbors	Clears all IS-IS neighbors.

Platform Description N/A

4.11 clear isis counter

Use this command to clear various statistics of IS-IS.

clear isis [*tag*] **counter**

Parameter Description

Parameter	Description
tag	IS-IS instance

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples

```
Ruijie# clear isis counter
```

Related Commands

Command	Description
clear isis *	Clears the data structure of all IS-ISs.

Platform Description N/A

4.12 default-information originate

Use this command to generate a default routing information and advertise it by LSP. Use the **no** form of this command to delete the default routing information from LSP.

default-information originate [**route-map** *map-name*]

no default-information originate [**route-map** *map-name*]

Parameter Description

Parameter	Description
map-name	(Optional) Associated route-map's name, with the maximum length being 32. By default, the route-map is not associated.

Defaults By default, there is no default route.

Command Mode IS-IS routing process configuration mode or address-family ipv6 mode.

Usage Guide The default route is not generated in the Level-2 domain. Use this command to allow the default route to enter the Level-2 domain.

Configuration Examples

```
Ruijie(config)# router isis
Ruijie(config-router)# default-information originate
Ruijie(config-router)# address-family ipv6
Ruijie(config-router-af)# default-information originate
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.13 distance

Use this command to set the management distance of the IS-IS routes. Use the **no** form of this command to restore the default settings.

distance *my-cost*

no distance

Parameter Description

Parameter	Description
my-cost	Distance value in the range of 1 to 255.

Defaults By default, the distance is 115.

Command Mode IS-IS routing process configuration mode

Usage Guide Use this command to configure the management distance of the IS-IS routes. The shorter the management distance, the more reliable the routing information is.

Configuration Examples

```
Ruijie(config)# router isis
Ruijie(config-router)# distance 100
```

Related

Command	Description

Commands

isis metric	Sets the metric value of the interface.

Platform Description N/A

4.14 domain-password

Use this command to set the plain-text authentication password of Level-2 domain. Use the **no** form of this command to cancel the password configured.

domain-password *password-string* [**send-only**]

no domain-password [**send-only**]

Parameter Description

Parameter	Description
password-string	Character string of the plain-text authentication password with the longest length being 254 characters.
send-only	Specifies the plain-text authentication password of the Level-2 domain applicable to the packets sent only, but not to the packets received.

Defaults By default, no authentication password is set.

Command Mode IS-IS routing process configuration mode

Usage Guide Configure this command to perform the authentication on the LSP, CSPN and PSNP packets received in the Level-2 domain and send the packets taking with the authentication information. In the Level-2 domain, all IS-IS devices must be configured the same password.

If the **authentication mode** command has been executed, this command will not be configured successfully. You need to delete the **authentication mode** command first.

Running the **no area-password send-only** command can only disable the **send-only** option

Configuration Examples

```
Ruijie(config)# router isis
Ruijie(config-router)# domain-password redgiant
```

Related Commands

Command	Description
area-password	Sets the plain-text authentication password of Level-1 area.
authentication mode	Specifies the IS-IS authentication mode.

Platform Description N/A

4.15 enable mib-binding

Use this command to bind MIBs with an IS-IS process. Use the **no** form of this command to unbind the MIB from the IS-IS process.

enable mib-binding

no enable mib-binding

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, MIBs are bound with IS-IS process 1.

Command Mode IS-IS routing process configuration mode

Usage Guide By default, MIBs are bound with IS-IS process 1. The IS-IS process support multiple processes. The administrator can use this command to bind MIBs with the IS-IS process.

Configuration Examples The following example binds the MIB with an IS-IS process.

```
Ruijie(config)# router isis
Ruijie(config-router)# enable mib-binding
```

Related Commands

Command	Description
graceful-restart helper disable	Disables the IS-IS GR Help capability.
isis hello-interval	Sets the interval of sending Hello packets.
isis hello-multiplier	Sets the Hello holdtime multiplier for the IS-IS interface.

Platform Description N/A

4.16 enable traps

Use this command to enable the system to send one or multiple types of IS-IS trap packets. Use the **no** form of this command to disable the system to send IS-IS trap packets.

enable traps { **all** | *traps set* }

no enable traps { **all** | *traps set* }

Parameter Description

Parameter	Description
all	Indicates all types of IS-IS trap packets.

traps set	Indicates the specified type of IS-IS trap packet.

Defaults By default, no IS-IS trap is sent.

Command Mode IS-IS routing process configuration mode

Usage Guide There are 18 types of IS-IS packets. The IS-IS packets can be classified into multiple sets. Each set includes several types of trap packets. To enable the system to send the IS-IS trap packet, you need to enable the global IS-IS trap using the **snmp-server enable traps isis** command, specify the host to receive the IS-IS trap packets, and use the **enable traps** { **all** | *traps set* } command to specify the type of IS-IS trap packet to be sent.

Configuration Examples The following example enables the system to send all IS-IS trap packets to the host of IP address 192.168.1.1.

```
Ruijie# configure terminal
Ruijie(config)#snmp-server enable traps isis
Ruijie(config)#snmp-server host 10.1.1.1 traps version 2c public
Ruijie(config)#router isis
Ruijie(config-router)# enable traps all
```

Related Commands

Command	Description
graceful-restart helper disable	Disables the IS-IS GR Help capability.
isis hello-interval	Sets the interval of sending Hello packets.
isis hello-multiplier	Sets the Hello holdtime multiplier for the IS-IS interface.

Platform Description N/A

4.17 exit-address-family

Use this command to exit IS-IS address family IPv6 configuration mode and return to IS-IS routing process configuration mode.

exit-address-family

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command IS-IS address-family IPv6 configuration mode

Mode

Usage Guide N/A

Configuration Examples The following example exits IS-IS address family IPv6 configuration mode.

```
Ruijie (config-router-af)#exit-address-family
Ruijie (config-router)#
```

Related Commands

Command	Description
graceful-restart helper disable	Disables the IS-IS GR Help capability.
isis hello-interval	Sets the interval of sending Hello packets.
isis hello-multiplier	Sets the Hello holdtime multiplier for the IS-IS interface.

Platform Description N/A

4.18 graceful-restart

Use this command to enable the IS-IS GR Restart capability. Use the **no** form of this command to disable this capability.

graceful-restart

no graceful-restart

Parameter Description

Parameter	Description
N/A	N/A

Defaults IS-IS GR is enabled by default.

Command Mode IS-IS routing process configuration mode

Usage Guide With this command used, after the device restart, the IS-IS protocol state is allow to restore to the state before restart without influencing the data forwarding in the condition of network state unchanged.

With the IS-IS GR Restart capability enabled on the device of multiple management boards, the hold time for maintaining the IS-IS adjacent relation shall not be less than 40 seconds to ensure the success of IS-IS graceful restart when the management boards are switched over suddenly. You can configure the hold time using the **isis hello-interval** and **isis hello-multiplier** commands. When the holdtime is less than 40s, the holdtime in the Hello packet header is set to 40 seconds by default.

Note: The IS-IS device needs the help of the GR Helper neighbor device to implement the graceful-restart.

Configuration Examples The following example enables the IS-IS GR Restart capability.

```
Ruijie(config)# router isis
Ruijie(config-router)# graceful-restart
```

Related Commands

Command	Description
graceful-restart helper disable	Disables the IS-IS GR Help capability.
isis hello-interval	Sets the interval of sending Hello packets.
isis hello-multiplier	Sets the Hello holdtime multiplier for the IS-IS interface.

Platform Description N/A

4.19 graceful-restart grace-period

Use this command to configure the maximal interval for the graceful-restart. Use the **no** form of this command to restore the default interval.

graceful-restart grace-period *seconds*

no graceful-restart grace-period

Parameter Description

Parameter	Description
second	Time interval allowed for the device graceful-restart, in the range of 1 to 65,535 seconds.

Defaults The default value is 300 seconds.

Command Mode IS-IS routing process configuration mode

Usage Guide N/A

Configuration Examples The following example sets the interval of the grace-restart to 40 seconds.

```
Ruijie(config)# router isis
Ruijie(config-router)# graceful-restart grace-period 40
```

Related Commands

Command	Description
graceful-restart	Enables the IS-IS GR Restart capability.
show isis graceful-restart	Displays the status information of the IS-IS GR Restart.

Platform Description N/A

4.20 graceful-restart helper disable

Use this command to disable the IS-IS GR Helper capability. Use the **no** form of this command to enable this capability.

graceful-restart helper disable

no graceful-restart helper disable

Parameter Description

Parameter	Description
N/A	N/A

Defaults IS-IS GR Helper capacity is enabled by default.

Command Mode IS-IS routing process configuration mode

Usage Guide To disable the IS-IS GR Helper capability, execute this command. In this case, the IS-IS will ignore the request of graceful-restarting the device.

Configuration Examples The following example disables the IS-IS GR Helper capability.

```
Ruijie(config)# router isis
Ruijie(config-router)# graceful-restart helper disable
```

Related Commands

Command	Description
graceful-restart	Enables the IS-IS GR Restart capability.

Platform Description N/A

4.21 hello padding

Use this command to pad IS-IS Hello packets.

hello padding [**multi-point | point-to-point**]

Use the **no** form of this command to cancel the padding of IS-IS Hello packets.

no hello padding [**multi-point | point-to-point**]

Parameter

Parameter	Description

Description

multi-point	Pads Hello packets of the LAN type.
point-to-point	Pads Hello packets of the P2P type.

Defaults Padding is enabled for Hello packets of the LAN type and P2P type by default.

Command Mode IS-IS routing process configuration mode

Default Level 14

Usage Guide Hello packets can be padded to notify a neighbor of the MTU supported by the local device. You can use this command to set whether to pad all Hello packets sent by the IS-IS process. You can also separately specify the type of Hello packets for padding, for example, you can set not to pad all Hello packets of the LAN type or not to pad all Hello packets of the P2P type.
The **isis hello padding** command is available in interface configuration mode. Hello packets sent by a specific interface are not padded if the padding of such Hello packets is cancelled in IS-IS routing process configuration mode or the padding of Hello packets sent by the interface is cancelled in interface configuration mode.

Configuration Examples The following example configures to cancel the padding of Hello packets of the P2P type.

```
Ruijie(config)# router isis
Ruijie(config-router)# no hello padding point-to-point
```

4.22 hostname dynamic

Use this command to replace the System ID of the router with the destination router's hostname.
Use the **no** form of this command to cancel this replacement.
hostname dynamic
no hostname dynamic

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, the hostname dynamic function is disabled.

Command Mode IS-IS routing process configuration mode

Usage Guide With this command configured, the hostname of the destination router replaces the System ID. The System IDs shown in the execution of the command such as **show isis database**, **show isis neighbors** are all replaced by the hostname of the destination router.

Configuration Examples

```
Ruijie(config)# router isis
Ruijie(config-router)# hostname dynamic
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.23 ignore-lsp-errors

Use this command to ignore the LSP checksum errors. Use the **no** form of this command to not ignore the LSP checksum errors.

ignore-lsp-errors

no ignore-lsp-errors

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, the LSP checksum errors are not ignored.

Command Mode IS-IS routing process configuration mode

Usage Guide When the local IS-IS receives a LSP, it will calculate the checksum of LSP received and compare the calculated checksum with that in the LSP packets. By default, if the checksum in the LSP packets is different from the checksum calculated, this LSP will be discarded without processing. If we executes the ignore-lsp-errors command to ignore the checksum errors, the LSP packets with the incorrect checksum will be processed as the normal packets.

Configuration Examples

```
Ruijie(config)# router isis
Ruijie(config-router)# ignore-lsp-errors
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.24 interfaces-protocol-compatible

Use this command to configure the Type-Length-Value (TLV) field of the IS-IS protocol to be padded based on protocols supported by an interface. Use the **no** form of this command to restore the padding of the TLV field of the IS-IS protocol based on protocols supported by an instance.

interfaces-protocol-compatible

no interfaces-protocol-compatible

Parameter Description

Parameter	Description
N/A	N/A

Defaults The TLV field of the IS-IS protocol is padded based on protocols supported by an instance by default.

Command Mode IS-IS routing process configuration mode

Default Level 14

Usage Guide When devices supporting IS-IS for IPv4 or IS-IS for IPv6 and those supporting both IS-IS for IPv4 and IS-IS for IPv6 on a network are configured to establish a neighbor relationship, the calculated routes may be unreachable, resulting in routing black holes. To prevent routing black holes, the TLV (#129) field of Ruijie IS-IS protocol is padded based on protocols supported by an instance, that is, IS-IS instances that establish a neighbor relationship need to support the same protocol.

The TLV (#129) field of the IS-IS protocol supported by devices of some vendors is padded based on protocols supported by an interface. In single topology mode, a Ruijie device connects to a device of another vendor, a loopback interface is configured on both devices, both IS-IS for IPv4 and IS-IS for IPv6 are enabled, and only a single protocol stack (IS-IS for IPv4 or IS-IS for IPv6) is configured on the interface for interconnecting the two devices. The device of the other vendor sends TLV#129 (supporting only a single protocol stack) based on interfaces whereas Ruijie device sends TLV#129 (supporting dual protocol stacks) based on instances. As a result, the displayed neighbor status on the device of the other vendor is "Init" but Ruijie device cannot establish a neighbor relationship with the device of the other vendor.

For this, the **interfaces-protocol-compatible** command can be configured to enable Ruijie devices to establish a neighbor relationship with devices of other vendors.

Configuration Examples The following example configures the TLV field of the IS-IS protocol to be padded based on protocols supported by an interface.

```
Ruijie(config)# router isis
Ruijie(config-router)# interfaces-protocol-compatible
```

Verification Run the **show run** command to check the configuration.

Prompts N/A

Common Errors N/A

Platform Description N/A

4.25 ip router isis

Use this command to enable the IPv4 IS-IS on the specified interface. This command must be configured in the IS-IS configuration. The interface will run on the IS-IS instance named with Tag. If this IS-IS instance is inexistent or this IS-IS instance is not enabled and not initialized, the interface will not enable the IS-IS routing.

Use the **no** form of this command to disable the IPv4 IS-IS routing on the specified interface.

ip router isis [*tag*]

no ip router isis [*tag*]

Parameter Description

Parameter	Description
tag	IS-IS instance name.

Defaults By default, the Ipv4 IS-IS is disabled on the interface.

Command Mode Interface configuration mode

Usage Guide Use this command to enable the IS-IS IPv4 routing protocol on the interface. The **no** form of this command disables the IS-IS IPv4 routing.

If the **no ipv4 unicast-routing** is executed in global configuration mode, the IS-IS will disable the IPv4 routing function on all interfaces, namely execute the **no ipv4 router isis** [*tag*] on all interfaces automatically, while other IS-IS configurations will remain unchanged.

Configuration Examples

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if)# ip router isis
```

Related Commands

Command	Description
ipv6 router isis	Enables the IPv6 IS-IS on the interface.
router isis	Creates IS-IS instances.

Platform Description N/A

4.26 ipv6 router isis

Use this command to enable the IPv6 IS-IS routing on the specified interface. This command must be configured in the IS-IS configuration. The interface will run on the IS-IS instance named with Tag. If this IS-IS instance is inexistent or this IS-IS instance is not enabled and not initialized, the interface will not enable the IS-IS routing.
Use the **no** form of this command to disable the IPv6 IS-IS routing on the specified interface.
ipv6 router isis [*tag*]
no ipv6 router isis [*tag*]

Parameter Description

Parameter	Description
tag	IS-IS instance name

Defaults By default, the Ipv6 IS-IS routiong is not supported on the interface.

Command Mode Interface configuration mode

Usage Guide Configure this command to enable the IS-IS IPv6 routing protocol on the interface. The **no** form of this command disables the IS-IS IPv6 routing.
If the **no ipv6 unicast-routing** is executed in the global configuration mode, the IS-IS will disable the IPv6 routing function on all interfaces, namely execute the **no ipv6 router isis** [*tag*] on all interfaces automatically, while other IS-IS configurations will remain unchanged.

Configuration Examples

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if)# ipv6 router isis
```

Related Commands

Command	Description
ip router isis	Enables the IPv4 IS-IS on the interface.
router isis	Creates IS-IS instances.

Platform Description N/A

4.27 isis authentication key-chain

Use this command to set the key-chain used by the IS-IS interface authentication. Use the **no** form of this command to cancel the specified key-chain.
isis authentication key-chain *name-of-chain* [**level-1** | **level-2**]
no isis authentication key-chain *name-of-chain* [**level-1** | **level-2**]

Parameter Description

Parameter	Description
name-of-chain	Key-chain name with the maximum length being 255.
level-1	Specifies the authentication key-chain of the Level-1.
level-2	Specifies the authentication key-chain of the Level-2.

Defaults By default, no IS-IS interface authentication key-chain is specified.

Command Mode Interface configuration mode

Usage Guide If the **key chain** command is not used to configure the corresponding key-chain, the authentication will not be performed. In addition, to make the IS-IS key-chain authentication effective, you need to configure the **isis authentication mode** command at the same time.
This key-chain can apply to the plain-text authentication mode and MD5 encrypted authentication mode. You can use the **isis authentication mode** command to set the authentication mode.
The length of the password key-string in the key-chain shall not be larger than 80 characters if the plain-text authentication mode is used, otherwise this configuration will fail.
Only one key-chain is used at one time. So, when configuring this command, the said key-chain will be overwritten by the new specified one.
If the Level is not specified, the key-chain will apply to both Level-1 and Level-2.
The key-chain specified by this command works on the Hello packets. The IS-IS will send or receive the password that belongs to this key-chain.
There may contain multiple passwords in the key-chain. When sending the packets, use the password with small number first. While receiving the packets, the packet will be received as long as the password of this packet received corresponds to any password in the key-chain.
The authentication commands configured in the IS-IS configuration mode such as authentication key-chain are effective to the LSP, SNP packets, but take no effect on the IS-IS interface.

Configuration Examples The following example specifies the authentication key-chain of the interface GigabitEthernet *0/1* named as *kc*.

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if)# isis authentication key-chain kc
```

Related Commands

Command	Description
isis authentication mode	Specifies the mode of IS-IS interface authentication.
isis authentication send-only	Specifies the IS-IS interface authentication only applicable to the packets sent, but not to the packets received.
key-chain	Configures the key-chain.

Platform N/A

Description

4.28 isis authentication mode

Use this command to specify the mode of IS-IS interface authentication. Use the **no** form of this command to remove the configuration.

isis authentication mode { **md5** | **text** } [**level-1** | **level-2**]

no isis authentication mode { **md5** | **text** } [**level-1** | **level-2**]

Parameter Description

Parameter	Description
md5	Specifies the MD5 authentication mode.
text	Specifies the plain-text authentication mode.
level-1	Specifies the interface authentication mode to take effect on the Level-1.
level-2	Specifies the interface authentication mode to take effect on the Level-2.

Defaults By default, no interface authentication mode is specified.

Command Mode Interface configuration mode

Usage Guide To make the key-chain configured by the **isis authentication key-chain** command take effect, you must use the **isis authentication mode** command to specify the authentication mode.

If the Level is not specified, the authentication mode specified will apply on both Level-1 and Level-2.

When configuring the **isis authentication mode** command, if the isis password has been executed, the set command will be overwritten by this command.

If the **isis authentication mode** command has been executed, the **isis password** will not be configured successfully. So, you need to delete the **isis authentication mode** command first.

Configuration Examples The following example specifies the authentication mode on the Level-2 of the interface GigabitEthernet 0/1 to be the MD5 authentication mode.

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if)# isis authentication mode md5 level-2
```

Related Commands

Command	Description
isis authentication key-chain	Specifies the key-chain used by the IS-IS interface authentication.
isis authentication send-only	Specifies the IS-IS interface authentication to only apply on the packets sent, but not on the packets received.
key-chain	Configures the key-chain.

isis password	Sets the plain-text authentication password for the packets transmit on the IS-IS interface.

Platform Description N/A

4.29 isis authentication send-only

Use this command to specify the IS-IS interface authentication to only apply to the packets sent and not to the packets received. Use the **no** form of this command to restore the authentication of packets received on the interface.

isis authentication send-only [**level-1** | **level-2**]

no isis authentication send-only [**level-1** | **level-2**]

Parameter Description

Parameter	Description
level-1	Set the **send-only** on the Level-1 of the interface.
level-2	Set the **send-only** on the Level-2 of the interface.

Defaults By default, this command is not configured. If the IS-IS interface authentication has been configured, then the authentication will be performed on the packets sent and recieved at the same time.

Command Mode Interface configuration mode

Usage Guide With this command configured, the IS-IS will set the authentication password in the Hello packets sent from the interface, however, the authentication will not be performed on the Hello packets received. It can apply to the following two occasions: 1. before deploying the IS-IS interface authentication for all devices in the network. 2. before changing the authentication password or authentication mode. Before the above two tasks start, you need to configure the **isis authentication send-only** command first to make each device perform no authentication on the Hello packets received, so as to avoid the network oscillation caused during the subsequent IS-IS interface authentication deployment. After the deployment of the entire network authentication finished, execute the **no isis authentication send-only** command to cancel the **send-only** authentication mode.

This command can apply to the plain-text authentication mode and MD5 authentication mode. You can use the **isis authentication mode** command to set the mode used by the IS-IS interface authentication.

If the Level is not specified, the authentication mode specified is applicable to the Level-1 and Level-2.

Configuration Examples The following example specifies the authentication on the Level-1 of the interface GigabitEthernet 0/1 using send-only authentication mode.

```
Ruijie(config)# interface GigabitEthernet 0/1
```

```
Ruijie(config-if)# isis authentication send-only level-1
```

Related Commands

Command	Description
isis authentication key-chain	Specifies the key-chain used by the IS-IS interface authentication.
isis authentication mode	Specifies the mode of the IS-IS interface authentication.
key-chain	Configures the key-chain.

Platform Description N/A

4.30 isis bfd

Use this command to enable association between IS-IS and BFD on an interface.
isis bfd [**disable** | **anti-congestion**]

Use the **no** form of this command to disable association between IS-IS and BFD on an interface.
no isis bfd [**disable** | **anti-congestion**]

Parameter Description

Parameter	Description
Disable	Disables association between IS-IS and BFD on an interface.
anti-congestion	Indicates the IS-IS BFD anti-flapping option.

Defaults If the **bfd all-interfaces** command is configured, association between IS-IS and BFD is enabled on an interface.
If the **bfd all-interfaces** command is not configured, association between IS-IS and BFD is disabled on an interface.
By default, the anti-flapping function is disabled.

Command Mode Interface configuration mode

Default Level 14

Usage Guide There are two methods for enabling or disabling association between IS-IS and BFD on interfaces.
Method 1: In IS-IS routing process configuration mode, run the [**no**] **bfd all-interfaces** [**anti-congestion**] command to enable or disable association between IS-IS and BFD on all interfaces running the IS-IS protocol.
Method 2: In interface configuration mode, run the **isis bfd** [**disable | anti-congestion**] command to enable or disable association between IS-IS and BFD on a specified interface.
In normal cases, the device with the BFD function enabled sends detection packets to detect the link

status at an interval of several milliseconds. When a link exception such as link interruption occurs, the device with the BFD function enabled rapidly detects the link exception and informs a device running the IS-IS protocol to delete neighbors and delete neighbor availability information from LSP packets. The device running the IS-IS protocol performs route re-calculation and generates a new route, to bypass the failed link, thereby implementing fast convergence. With the introduction of some new technologies such as the Multi-Service Transport Platform (MSTP), link congestion easily occurs in peak hours. When congestion occurs, the device with the BFD function enabled rapidly detects a link exception, informs a device running the IS-IS protocol to delete a neighbor and delete neighbor availability information from LSP packets, and performs link switching to bypass the congested link. The interval for an IS-IS neighbor to send a Hello detection packet is 10 seconds, and the timeout time is 30 seconds. When an exception is detected via the BFD function, IS-IS Hello packets can be normally received, the IS-IS neighbor relationship can be rapidly reestablished, and the route is restored to pass the congested link. Then, BFD is performed again. If there is still a link exception, link switching is performed repeatedly. The route switches between the congested link and other links and flapping occurs.

The anti-flapping function can be enabled to prevent route flapping in the case of link congestion. After the anti-flapping function is enabled, if a link is congested, the IS-IS neighbor keeps alive but the neighbor availability information in LSP packets is deleted, and the route switches to a non-congested link. After the link is restored, that is, congestion is eliminated, the neighbor availability information is restored in LSP packets, and the route switches back to the originally congested link, thereby preventing route flapping.

When IS-IS anti-flapping is enabled, the BFD anti-flapping command (**bfd up-dampening**) must be configured on an interface. The two commands must be configured simultaneously. If only one of them is configured, the anti-flapping function does not take effect or a network exception is incurred.

- Before association between IS-IS and BFD is configured, a BFD session must be configured on an interface.
- When the BFD anti-flapping command is configured on an interface, if association between IS-IS and BFD is already configured on the interface, the anti-flapping function must be enabled for a device running the IS-IS protocol.
- When the IS-IS anti-flapping option is configured, the BFD anti-flapping command must be configured on an interface.

Configuration Examples

1. The following example disables association between IS-IS and BFD on GigabitEthernet 0/1.

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if)# no switchport
Ruijie(config-if)# isis bfd disable
```

2. The following example enables the IS-IS BFD anti-flapping option and configures the BFD anti-flapping command on GigabitEthernet 0/1.

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if)# no switchport
Ruijie(config-if)# isis bfd anti-congestion
```

```
Ruijie(config-if)# bfd up-dampening 60000
```

4.31 isis circuit-type

Use this command to set the circuit-type for the IS-IS interface. Use the **no** form of this command to restore the default settings.

isis circuit-type { **level-1** | **level-1-2** | **level-2-only** }

no isis circuit-type

Parameter Description

Parameter	Description
level-1	Forms the Level-1 adjacency.
leve-2-only	Forms the Level-2 adjacency.
level-1-2	Forms the Level-1-2 adjacency.

Defaults By default, the circuit-type is Level-1-2.

Command Mode Interface configuration mode

Usage Guide If the circuit-type of Level-1 or Level-2-only is configured, then IS-IS will only send PDUs of the same level.

If is-type is configured to Level-1 or Level-2-only, the IS-IS instance will only process data at this level, that is, this Interface will only send the Level PDUs with is-type being same as circuit-type.

Configuration Examples

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if)# isis circuit-type level-2-only
```

Related Commands

Command	Description
isis-type	Sets the Level of IS-IS instance.

Platform Description N/A

4.32 isis csnp-interval

Use this command to set the interval for broadcasting the CSNP packets on the IS-IS interface, with the unit being second. Use the **no** form of this command to restore the default interval.

isis csnp-interval *interval* [**level-1** | **level-2**]

no isis csnp-interval [*interval*] [**level-1** | **level-2**]

Parameter Description

Parameter	Description
interval	Interval for sending the CSNP packets in the range of 0 to 65535, with the unit being second.
level-1	Interval for sending the CSNP packets configured only on the Level-1.
level-2	Interval for sending the CSNP packets configured only on the Level-2.

Defaults By default, in the broadcast network, the interval for sending the CSNP packets is 10 seconds. While in the P2P interface network, no CSNP packet is sent by default.
When using this command without the parameter Level-1 and Level-2, the new setting is defaulted to be applicable to the Level-1 and Level-2 at the time.

Command Mode Interface configuration mode

Usage Guide Configure this command to change the interval for sending the CSNP packets. By default, the DIS on the broadcast network sends the CSNP packets every 10 seconds.
For the P2P interface network, by default, the CSNP packets will only be sent at the beginning of adjacency formation. If the interface is set to mesh-groups, you can configure the periodic sending of the CSNP packets.
If the csnp-interval is set to 0, no CSNP packets will be sent.

Configuration Examples

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if)# isis csnp-interval 20
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.33 isis hello-interval

Use this command to set the interval for sending Hello packets on the interface, with the unit being second. Use the **no** form of this command to restore the default interval.
isis hello-interval { *interval* | **minimal** } [**level-1** | **level-2**]
no isis hello-interval [**level-1** | **level-2**]

Parameter Description

Parameter	Description
interval	Interval for sending the Hello packet, in the range of 1 to 65536.

minimal	The holdtime is set to the minimal value 1.
level-1	This interval applies on the Level-1.
level-2	This interval applies on the Level-2.

Defaults By default, the interval value is 10 seconds, which is applicable to the Level-1 and Level-2 at the same time.
When using this command without the parameter Level-1 and Level-2, the new setting is defaulted to be applicable to the Level-1 and Level-2 at the time.

Command Mode Interface configuration mode

Usage Guide Configure this command to change the interval for sending Hello packets. By default, the multiplier of the Hello holdtime is 3, and the DIS in broadcast network sends Hello packets at an interval which is three times of non-DIS. If this IS is elected as DIS on this interface, the interface will send Hello packets every 3.3 seconds by default.
If the key word "minimal" is used, then the "holdtime" in Hello packets will be set to 1, and hello interval will be calculated based on the hello-multiplier. For example, if hello-multiplier is configured to 4 and "isis hello-interval minimal" is configured at the same time, the value of hello-interval shall be 1s/4 (250ms).
By default, the CPU protection is enabled on the switch, so that the number of packets corresponding to the destination group addresses of ISIS (AllISSystems, AllL1ISSystems, AllL2ISSystems) is limited when they are sent to the CPU, for example , the default limited value is 400pps. The number of packets received by the switch may be larger than the default value if there are many neighbors or the interval for sending Hello packets is short, resulting in continual vibration of the adjacent relation. In this case, you need to raise the limit of IS-IS packets using the global commands **cpu-protect type isis-is pps**, **cpu-protect type isis-l1is pps** and **cpu-protect type isis-l2is pps**.

Configuration Examples

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if)# isis hello-interval 5 level-1
Ruijie(config)# interface GigabitEthernet 0/2
Ruijie(config-if)# isis hello-interval minimal
```

Related Commands

Command	Description
isis hello-multiplier	Sets the multiplier of the Hello hold timer.

Platform Description N/A

4.34 isis hello-multiplier

Use this command to set the multiplier of Hello hold timer. Use the **no** form of this command to restore the default settings.

isis hello-multiplier *multiplier-number* [**level-1 | level-2**]
no isis hello-multiplier [*multiplier-number*] [**level-1 | level-2**]

Parameter Description

Parameter	Description
multiplier-number	Multiplier value in the range of 2 to 100.

Defaults By default, the multiplier is 3..

Command Mode IS-IS routing process configuration mode

Usage Guide Use this command to set the multiplier of Hello holdtime. The holdtime value in the Hello packet is the product of hello-interval and this multiplier.

Configuration Examples

```
Ruijie(config)# router isis
Ruijie(config-router)# isis hello-multiplier 5
```

Related Commands

Command	Description
isis hello-interval	Sets the interval for sending the Hello packets.

Platform Description N/A

4.35 isis hello padding

Use this command to specify the filling mode for the IS-IS Hello packets. Use the **no** form of this command to fill no IS-IS Hello packets.
isis hello padding
no isis hello padding

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, the **isis hello padding** is executed.

Command Mode Interface configuration mode

Usage Guide Fill the IS-IS Hello packets to advertise the MTU supported to the neighbors.

Configuration

```
Ruijie# configure terminal
```

Examples

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if)# no isis hello padding
```

Related Commands

Command	Description
isis hello-interval	Sets the interval for sending the Hello packets.

Platform Description N/A

4.36 isis lsp-flood

Use this command to set the maximum number of LSP packets that can be sent by an interface at a time.

isis lsp-flood *lsp-number* [**level-1 | level-2**]

Use the **no** form of this command to restore the default number of LSP packets that can be sent by an interface at a time.

no isis lsp-flood [**level-1 | level-2**]

Parameter Description

Parameter	Description
lsp-number	Specifies the maximum number of LSP packets that can be sent by an interface at a time. The value range is **1** to **1000**. The default value is **5**.
level-1	Indicates that the configuration takes effect only at Level-1.
level-2	Indicates that the configuration takes effect only at Level-2.

Defaults If no level is specified, the default value is **level-1-2**, that is, the configuration takes effect at both Level-1 and Level-2.

Command Mode Interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example sets the maximum number of LSP packets that can be sent by Interface GigabitEthernet 0/1 at Level-2 at a time to **10**.

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if)# isis lsp-flood 10 level-2
```

4.37 isis lsp-interval

Use this command to set the interval for the LSP PDU transmission. Use the **no** form of this command to restore the default interval.

isis lsp-interval *interva*l

no isis lsp-interval

Parameter Description

Parameter	Description
interval	Interval time in the range of 1 to 4294967295, with the unit being millisecond.

Defaults By default, the lsp-interval is 33ms.

Command Mode Interface configuration mode

Usage Guide This command is used to set the minimal interval for sending the LSPs on the interface, with the unit being millisecond.

Configuration Examples

```
Ruijie#configure terminal
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if)# isis lsp-interval 100
```

Related Commands

Command	Description
isis retransmit-interval	Sets the LSP retransmission interval in the P2P network.

Platform Description N/A

4.38 isis mesh-group

Use this command to add the interface to the specified mesh-group. Use the **no** form of this command to separate the interface from the mesh-group.

isis mesh-group { **blocked** | *mesh-group-id* }

no isis mesh-group

Parameter Description

Parameter	Description
blocked	Blocks all LSP forwarding on the interface.
mesh-group-id	Adds the interface to the mesh-group of specified mesh-group-id with

	the range being 1 to 4,294,967,295.

Defaults By default, the interface is not added to any mesh-group.

Command Mode Interface configuration mode

Usage Guide Mesh-groups can control the exceeding and redundant LSP spreading in the NBMA network. In the normal condition, the IS-IS router spreads out the LSP from all interfaces except for the receiving one, that is, if a router is configured multiple subintefaces, the LSP will be sent from all subinterfaces and the neighbors will receive many same LSPs, which wastes a large number of CPU and bandwidth. The IS-IS mesh-group allows grouping the router interfaces, so if a LSP is received by one subinterface in the group, this LSP will not be spread out through other subinterfaces in the group. And if the router receives the LSP from the interface out of the group, it will spread out the LSP from other interfaces as usual.
If you need to configure the **mesh-group** on the IS-IS interface, use the **isis csnp-interval** command to configure the interval for sending the non-0 CSNP packets, so as to send the CNSP packets regularly to synchronize the LSP and ensure the integrity of LSP synchronization between neighbors in network.

Configuration Examples

```
Ruijie#configure terminal
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if)#isis mesh-group 1
```

Related Commands

Command	Description
isis network point-to-point	Sets the Broadcast interface type of IS-IS to Point-to-Point.

Platform Description N/A

4.39 isis metric

Use this command to set the metric for the interface. Use the **no** form of this command to restore the default metric.
isis metric *metric* [**level-1** | **level-2]**
no isis metric [*metric*] [**level-1** | **level-2**]

Parameter Description

Parameter	Description
metric	Metric value in the range of 1 to 63.
level-1	Sets this metric to apply on the Level-1 circuit.
level-2	Sets this metric to apply on the Level-2 circuit.

Defaults By default, the metric is 10, which applies on both Level-1 and Level-2 circuit.

Command Mode Interface configuration mode

Usage Guide The Metric value is in the TLV of the IP reachable information and is applied to the SPF calculation. The greater metric value means the more routing cost on this interface and the longer path calculated by SPF.
This value is effective only when the metric-style includes narrow.

Configuration Examples

```
Ruijie#configure terminal
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if)#isis metric 1
```

Related Commands

Command	Description
metic-style	Sets the metric type.
isis wide-metric	Sets the wide metric of the IS-IS interface.

Platform Description N/A

4.40 isis network point-to-point

Use this command to set the IS-IS Broadcast interface to the Point-to-Point type. Use the **no** form of this command to restore the interface type to the Broadcast.
isis network point-to-point
no isis network point-to-point

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, the **isis network point-point** is not executed.

Command Mode Interface configuration mode

Usage Guide N/A

Configuration Examples

```
Ruijie# configure terminal
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if)# isis network point-to-point
```

Related Commands

Command	Description
isis mesh-group	Adds the IS-IS interface into the specified mesh group.

Platform Description N/A

4.41 isis passive

Use this command to configure the passive interface. Use the **no** form of this command to remove the passive interface.

isis passive

no isis passive

Parameter Description

Parameter	Description
N/A	

Defaults The passive interface is not configured by default.

Command Mode IS-IS routing process configuration mode

Usage Guide Use this command to disable the interface to receive and send the IS-IS packets, but to advertise the IP address of the interface.

Configuration Examples The following example configures interface GigabitEthernet 0/0 as passive.

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if)# isis passive
```

Related Commands

Command	Description
show run	Displays whether the command is configured
show isis interface	Displays whether the interface is passive

Platform Description N/A

4.42 isis password

Use this command to set the plain-text authentication password for the Hello packet transmitted on

the interface. Use the **no** form of this command to remove the configurations.

isis password *password-string* [**send-only**] [**level-1** | **level-2**]

no isis password [**send-only**] [**level-1** | **level-2**]

Parameter Description

Parameter	Description
password-string	The character strings of the plain-text authentication password with the longest length being 254 characters.
send-only	The plain-text authentication password is only applicable to the packets sent. No authentication will be performed on the packets received.
level-1	This password applies to the Level-1 circuit.
level-2	This password applies to the Level-2 circuit.

Defaults By default, both the passwords on the Level-1 and Level-2 are not configured.

Command Mode Interface configuration mode

Usage Guide This command is used to set the plain-text authentication password for the Hello packets transmitted on the interface. Use the **no** form of this command to clear the passwords. When the Level is not specified, the authentication password configured is by default applicable to every Level. If the **isis authentication mode** command has been executed, this command will not be configured successfully. To configure this command, you need to delete the **isis authentication mode** command first.

Running the **no isis password send-only** command can only disable the **send-only** option.

Configuration Examples

```
Ruijie# configure terminal
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if)# isis password redgiant
```

Related Commands

Command	Description
isis authentication mode	Specifies the mode of the IS-IS interface authentication.

Platform Description N/A

4.43 isis priority

Use this command to set the priority for the DIS election on the LAN. Use the **no** form of this command to restore the default priority.

isis priority *value* [**level-1** | **level-2**]

no isis priority [*value*] [**level-1** | **level-2**]

Parameter Description

Parameter	Description
value	Value of the priority in the range of 0 to 127.
level-1	Applies to the Level-1 circuit.
level-2	Applies to the Level-2 circuit.

Defaults The default priority value is 4 and it is applied on both Level-1 and Leve-2 circuit.

Command Mode Interface configuration mode

Usage Guide Use this command to change the priority value in the Hello of LAN.
The low priority value has the lower priority in the DIS election than the high priority value.
This command takes no effect on the Point-to-Point network interface.
The **no isis priority** command is used to restore the priority to the default value no matter whether the parameter is followed. If you want to modify the configured priority, you can either use the **isis priority** command with parameter specified to overwrite the configured command directly, or configure a new parameter after restoring the priority to the default value.

Configuration Examples

```
Ruijie# configure terminal
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if)# isis priority 127 level-1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.44 isis psnp-interval

Use this command to set the minimum transmission interval of PSNP packets.
isis psnp-interval *seconds* [**level-1** | **level-2**]

Use the **no** form of this command to cancel the specified minimum transmission interval of PSNP packets.
no isis psnp-interval [**level-1** | **level-2**]

Parameter Description

Parameter	Description
seconds	Indicates that the value range is **1** to **120** in seconds.

level-1	Indicates that the configuration takes effect only at Level-1.
level-2	Indicates that the configuration takes effect only at Level-2.

Defaults This command is not configured by default. The default minimum transmission interval is 2 seconds and takes effect both at Level-1 and Level-2.

Command Mode Interface configuration mode

Default Level 14

Usage Guide PSNP packets are used to request for LSP packets or respond to received LSP packets in a point-to-point network. In both cases, it is recommended to send PSNP packets rapidly. If there are excessive LSP packets but the device performance is poor, you can set the PSNP packet transmission interval and LSP retransmission time to larger values, to reduce the device load.

Configuration Examples The following example sets the PSNP packet transmission interval to 5 seconds for Interface GigabitEthernet 0/1 at Level-2.

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if)# isis psnp-interval 5  level-2
```

4.45 isis retansmit-interval

Use this command to set the LSP retransmission interval. Use the **no** form of this command to restore the default interval.

isis retransmit-interval *interval-time*

no isis retransmit-interval

Parameter Description

Parameter	Description
interval-time	Interval time in the range of 0 to 65,535 with the unit being second.

Defaults 5s

Command Mode Interface configuration mode

Usage Guide This command is used to set the LSP retransmission interval. The retransmission refers to that on a point-to-point link, if the local router fails to receive the PSNP reply after sending LSPs in the retransmit-interval, it will retransmit that LSP packets.

Configuration Examples

```
Ruijie# configure terminal
Ruijie(config)# interface serial 0/1
Ruijie(config-if)# isis retransmit-interval 10
```

Related Commands

Command	Description
isis lsp-interval	Configures the interval for LSP advertisement on the interface.

Platform Description N/A

4.46 isis suppress on-neighbor-up

Use this command to suppress the routing calculation after the IS-IS neighbor is up. Use the **no** form of this command to restore the default setting.

isis suppress on-neighbor-up *seconds*

no isis suppress on-neighbor-up

Parameter Description

Parameter	Description
seconds	Delay time in the range of 1 to 60.

Defaults By default, this function is disabled.

Command Mode Interface configuration mode

Usage Guide After the interface neighbor is up, this command prevents the neighbor reachability from being added to LSP so as to delay the routing calculation. When the timer expires, the neighbor reachability is added to LSP to start the routing calculation. This function prevents the routing calculation from using the old LSP, which may lead to routing flapping.

Configuration Examples The following example suppresses the routing calculation on the interface GigabitEthernet 0/0 after the neighbor is up.

Ruijie(config)#int GigabitEthernet 0/0

```
Ruijie(config-if)# isis suppress on-neighbor-up 10
```

Related Commands

Command	Description
show ip route	Checks whether the suppression succeeds.

Platform Description N/A

4.47 isis three-way-handshake disable

Use this command to disable three-way handshake for point-to-point network. Use the **no** form of this command to enable three-way handshake for point-to-point network.

isis three-way-handshake disable

no isis three-way-handshake disable

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, three-way handshake is enabled.

Command Mode Interface configuration mode

Usage Guide In the point-to-point network, three-way handshake is enabled by default. That is to say, the IS-IS neigbor can be established only after three-way handshake is successful. You can use this command to cancel three-way handshake negotiation to accelerate IS-IS neighbor establishment or for the the device not supporting three-way handshake.

Configuration Examples The following example disables three-way handshake on interface GigabitEthernet 0/0.

```
Ruijie(config)#int GigabitEthernet 0/0
Ruijie(config-if)# isis network point-to-point
Ruijie(config-if)# isis three-way-handshake disable
```

Related Commands

Command	Description
metric-type	Sets the metric type.
isis metric	Sets the metric value of the interface.

Platform Description N/A

4.48 isis wide-metric

Use this command to set the wide metric of the interface. Use the **no** form of this command to restore the default wide metric.

isis wide-metric *metric* [**level-1** | **level-2**]

no isis wide-metric [*metric*] [**level-1** | **level-2**]

Parameter Description

Parameter	Description

metric	Metric value in the range of 1 to 16,777,241.
level-1	Sets this Metric to apply on the Level-1 circuit.
level-2	Sets this Metric to apply on the Level-2 circuit.

Defaults By default, the metric value is 10 and it is applicable to both Level-1, Level-2 circuit.

Command Mode Interface configuration mode

Usage Guide The Metric value is in the TLV of the IP reachable information and is applied to the SPF calculation. The greater metric value means the more routing cost on this interface and the longer path calculated by SPF.
This value is effective only when the metric-style includes wide.

Configuration Examples

```
Ruijie#configure terminal
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if)#isis wide-metric 1000
```

Related Commands

Command	Description
metric-type	Sets the metric type.
isis metric	Sets the metric value of the interface.

Platform Description N/A

4.49 is-name

Use this command to replace the system ID of an instance with the configured name. Use the **no** form of this command to restore the default settings.
is-name *name*
no is-name

Parameter Description

Parameter	Description
name	Indicates the name for replacing the system ID. The name contains a maximum of 64 characters.

Defaults By default, the function is disabled.

Command Mode IS-IS routing process configuration mode

Usage Guide Use this command to replace the system ID of an instance with the configured name. All system IDs

displayed in the command output of **show isis database** and **show isis neighbors** are replaced with the configured name.

Configuration Examples The following example replaces the system ID of an instance with the configured name.

```
Ruijie(config)# router isis
Ruijie(config-router)# is-type level-1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.50 is-type

Use this command to specify the level for the IS-IS process. Use the **no** form of this command to restore the default level for IS-IS process.

is-type { **level-1** | **level-1-2** | **level-2-only** }

no is-type

Parameter Description

Parameter	Description
level-1	Specifies the IS-IS process running on the Level-1 only.
level-1-2	Specifies the IS-IS process running on both Level-1 and Level-2.
level-2-only	Specifies the IS-IS process running on the Level-2 only.

Defaults By default, the IS-IS process runs on Level-1-2.

Command Mode IS-IS routing process configuration mode

Usage Guide Changing the is-type enables or disables the route of one Level.

Configuration Examples

```
Ruijie# configure terminal
Ruijie(config)# router isis
Ruijie(config-router)# is-type level-1
```

Related Commands

Command	Description
isis circuit-type	Sets the type of Interface circuit.

Platform Description N/A

4.51 log-adjacency-changes

Use this command to log the changes of the IS adjacency status in case of debug disabled. Use the **no** form of this command to disable this function.

log- adjacency-changes

no log- adjacency-changes

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, this function is enabled.

Command Mode IS-IS routing process configuration mode

Usage Guide You can also use the **debug** command to log the changes of the IS adjacency status. But using the IS-IS debug command will exhaust large numbers of resources.

Configuration Examples

```
Ruijie(config-router)# log-adjacency-changes
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.52 lsp-fragments-extend

Use this command to enable the LSP fragment extension mode for a level. Use the **no** form of this command to disable the LSP fragment extension mode for a level.

lsp-fragments-extend [**level-1 | level-2**] [**compatible rfc3786**]

no lsp-fragments-extend [**level-1 | level-2**] [**compatible rfc3786**]

Parameter Description

Parameter	Description
level-1	Enables the LSP fragment extension mode for the Level-1 only.
level-2	Enables the LSP fragment extension mode for the Level-2 only.

compatible	Compatible with RFC3786
rfc3786	The older version of extended LSP implementation.

Defaults By default, LSP fragment extension is disabled.
If no level is specified, the LSP fragment extension mode is enabled for both Level-1 and Level-2.

Command Mode IS-IS routing process configuration mode

Usage Guide The originating LSP can be divided up to 256 fragments. After the 256 fragments are filled, the subsequent link state information, such as the neighbor and IP routing, will be discarded, resulting in network problem.
To avoid the above problem, you can enable the LSP fragment extension function, and configure the additional system ID using the **virtual-system** command.
If there are other vendor's device supporting RFC3786 standard in the network, you need to display the link state database of the device when enabling or disabling the **compatible** option. If there is indeed the vendor's device, you can use the **clear isis *** command to clear the remaining LSP packets to trigger the system to update the link state database.

Configuration Examples The following example enables the LSP fragment extension mode for the Level-2.

```
Ruijie(config)# router isis
Ruijie(config-router)# lsp-fragments-extend level-2
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.53 lsp-gen-interval

Use this command to set the minimal interval of the LSP generation. Use the **no** form of this command to restore the default value.
lsp-gen-interval [**level-1** | **level-2**] *maximum-interval* [*initial-interval hold-interval*]
no lsp-gen-interval [**level-1 | level-2**]

Parameter Description

Parameter	Description
level-1	The minimal interval is applicable on the Level-1 IS-IS.
level-2	The minimal interval is applicable on the Level-2 IS-IS.
maximum-interval	Indicates the maximum interval for generating two consecutive LSP packets. The value range is **1** to **65535** (in seconds). The default value is **5**.

initial-interval	Indicates the waiting time for generating an LSP packet for the first time. The value range is **0** to **60000** (in milliseconds). The default value is **50**.
hold-interval	Indicates the minimum interval for generating an LSP packet for the second time. The value range is **10** to **60000** (in milliseconds). The default value is **200**.

Defaults By default, this command is not configured and the interval of the minimal generation is 5s, it is effective on both Level-1 an Level-2

Command Mode IS-IS routing process configuration mode

Usage Guide The LSP packet generation interval refers to the interval for generating two different LSP packets. A smaller generation interval indicates faster network convergence, which, however, will be accompanied by frequent flooding on the network.

The waiting time for generating an LSP packet for the first time is the initial interval. If the network becomes unstable, the LSP packet regeneration interval is changed to be less than the maximum interval, and the interval for generating an LSP packet for the second time becomes the hold interval. A corresponding penalty will be added to this interval: The next interval for regenerating a LSP packet doubles the previous interval for generating the same LSP packet, until the regeneration interval reaches the maximum interval. Subsequent LSP packets will be generated at the maximum interval. When the network becomes stable, the LSP packet regeneration interval becomes greater than the maximum interval, and the waiting time for LSP packet generation is restored to the initial interval. Link changes have high requirements for convergence. The initial interval can be set to a small value. The preceding parameters can also be adjusted to larger values to reduce CPU consumption.

The value of **initial-interval** cannot be greater than that of **maximum-interval**. Otherwise, the value of **initial-interval** will be used as the value of **maximum-interval**.

The value of **hold-interval** cannot be greater than that of **maximum-interval**. Otherwise, the value of **hold-interval** will be used as the value of **maximum-interval**.

The value of **initial-interval** cannot be greater than that of **hold-interval**. Otherwise, the value of **initial-interval** will be used as the value of **hold-interval**.

Configuration Examples

```
The following example sets the minimum interval for generating two duplicate LSP packets to 10 seconds, the interval for generating a duplicate LSP packet for the first time to 100 ms, and the interval for generating a duplicate LSP packet for the second time to 200 ms.
Ruijie(config)# router isis
Ruijie(config-router)# lsp-gen-interval 10 100 200
```

The following example sets the minimum interval for generating two duplicate LSP packets to 5 seconds.

```
Ruijie(config)# router isis
Ruijie(config-router)# lsp-gen-interval 5
```

Related Commands

Command	Description
lsp-refresh-interval	Configures the interval for LSP refresh.

Platform Description N/A

4.54 lsp-length originate

Use this command to set the maximum length for transmitting LSP packets.
lsp-length originate *size* [**level-1** | **level-2**]

Use the **no** form of this command to restore the default value.
no lsp-length originate [**level-1** | **level-2**]

Parameter Description

Parameter	Description
size	Specifies the maximum length for transmitting LSP packets. The value range is **512** to **16000** in bytes.
level-1	Indicates that the configuration takes effect only at Level-1.
level-2	Indicates that the configuration takes effect only at Level-2.

Defaults The default value of the maximum length for transmitting LSP packets is **1492**. If no level is specified, the default value is **level-1-2**, that is, the configuration takes effect at both Level-1 and Level-2.

Command Mode IS-IS routing process configuration mode

Default Level 14

Usage Guide In principle, the length of LSP and SNP packets cannot be greater than the interface MTU. Otherwise, LSP packets and SNP packets are directly discarded upon being sent.

Configuration Examples The following example sets the maximum length for transmitting LSP packets at Level-2 to 1498 bytes.

```
Ruijie(config)# router isis 1
Ruijie(config-router)# lsp-length originate 1498 level-2
```

4.55 lsp-length receive

Use this command to set the maximum length for receiving LSP packets.
lsp-length receive *size*

Use the **no** form of this command to restore the default value.

no lsp-length receive

Parameter Description

Parameter	Description
size	Specifies the maximum length of LSP packets. The value range is **1,492** to **16,000** in bytes according to the RFC.

Defaults The default value is **1492**.

Command Mode IS-IS routing process configuration mode

Default Level 14

Usage Guide This command is used to control the maximum length of LSP packets that can be received by the local device. In fact, to prevent a route convergence failure, intermediate nodes need to receive LSP packets with the maximum length of the interface MTU as long as the memory permits. In this sense, this command seems nominal. The maximum length for receiving LSP packets cannot be less than the maximum length for transmitting LSP packets. If the maximum length for receiving LSP packets is less than the maximum length for transmitting LSP packets, the maximum length for receiving LSP packets is automatically adjusted to the maximum length for transmitting LSP packets.

Configuration Examples The following example configures the maximum length for receiving LSP packets to 1498 bytes.

```
Ruijie(config)# router isis
Ruijie(config-router)# lsp-length receive 1498
```

4.56 lsp-refresh-interval

Use this command to set the LSP refresh interval. Use the **no** form of this command to restore the default value.

lsp-refresh-interval *interval*

no lsp-refresh-interval

Parameter Description

Parameter	Description
interval	LSP refresh interval in the range of 1 to 65535 with unit being second.

Defaults By default, the lsp-refresh-interval is 900 seconds.

Command Mode IS-IS routing process configuration mode

Usage Guide If the LSP stable status lasts for the time of refresh interval, LSP will refresh this LSP and update the LSP version and publish it.
It should be noted that the lsp-refresh-interval must be less than the max lifetime.

Configuration Examples

```
Ruijie(config)# router isis
Ruijie(config-router)# lsp-refresh-interval 600
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.57 max-area-addresses

Use this command to set the maximal number of area address allowed. Use the **no** form of this command to restore the default value.
max-area-addresses *value*
no max-area-addresses

Parameter Description

Parameter	Description
value	The maximal number of area address allowed, in the range of 3 to 6.

Defaults By default, the max-area-addreses is 3.

Command Mode IS-IS routing process configuration mode

Usage Guide For the IS routers of Level-1, only the ones with the same max-area-addresses are allowed to establish the adjacency relation.

Configuration Examples

```
Ruijie# configure terminal
Ruijie(config)# router isis
Ruijie(config-router)# max-area-addresses 5
```

Related Commands

Command	Description
net	Sets the IS-IS NET(Network Entry Title) address.

Platform Description N/A

4.58 maximum-paths

Use this command to set the maximum number of IS-IS equal-cost routing entries in the routing table.
maximum-paths *maximum*

Use the **no** form of this command to restore the default value.
no maximum-paths

Parameter Description

Parameter	Description
maximum	Maximum number of IS-IS equal-cost routing entries in the routing table. The value range is **1** to **device capacity**.

Defaults The default value is **2**.

Command Mode IS-IS routing process configuration mode, IS-IS address-family IPv6 configuration mode

Default Level 14

Usage Guide This command is used by the IS-IS protocol to control the number of IS-IS equal-cost routing entries in the routing table. The routing table itself also has a command for controlling the number of equal-cost routing entries. The effective number of equal-cost routing entries is the smaller of the two values.

Configuration Examples The following example sets the maximum number of IS-IS IPv4 equal-cost routing entries in the routing table to **5**.

```
Ruijie(config)# router isis
Ruijie(config-router)# maximum-paths 5
```

The following example sets the maximum number of IS-IS IPv6 equal-cost routing entries in the routing table to **6**.

```
Ruijie(config)# router isis
Ruijie(config-router)# address-family ipv6
Ruijie(config-router-af)# maximum-paths 6
```

4.59 max-lsp-lifetime

Use this command to set the maximum value of the LSP lifetime. Use the **no** form of this command to restore the default value.
max-lsp-lifetime *value*
no max-lsp-lifetime

Parameter Description

Parameter	Description
value	Maximum value of the LSP lifetime in the range of 1 to 65,535, with unit being second.

Defaults By default, the max-lsp-lifetime is 1200 seconds.

Command Mode IS-IS routing process configuration mode

Usage Guide It should be noted that the max-lsp-lifetime must be greater the lsp-refresh-interval.

Configuration Examples

```
Ruijie# configure terminal
Ruijie(config)# router isis
Ruijie(config-router)# max-lsp-lifetime 1500
```

Related Commands

Command	Description
lsp-refresh-interval	Configures the interval for LSP refresh.

Platform Description N/A

4.60 max-metric on-neighbor-up

Use this command to configure the maximum metric for the connected routes after the first neighbor is up. Use the **no** form of this command to restore the default settings.

max-metric on-neighbor-up *seconds*

no max-metric on-neighbor-up

Parameter Description

Parameter	Description
seconds	Delay time in the range of 5 to 1800.

Defaults The command is not configured by default.

Command Mode IS-IS routing process configuration mode

Default Level 14

Usage Guide When the ISIS Overlay scene is applied on the Underlay network, Overlay tunnel may rely on Underlay routing. After ISIS neighbor is up, the Underlay routing is reachable but the Overlay tunnel may not be created, which may lead to traffic interruption. Therefore, this command is run to prevent traffic

interruption. According to the metric type, the maximum metric for Narrow is 63 and for Wide is 16777214.

Configuration Examples The following example sets the maximum metric after the first neighbor is up.

```
Ruijie(config)# router isis
Ruijie(config-router)# max-metric on-neighbor-up 100
```

4.61 min-lsp-arrival

Use this command to set the interval for receiving duplicate LSP packets.
min-lsp-arrival [**level-1 | level-2**] *maximum-interval initial-interval hold-interval*

Use the **no** form of this command to cancel the function of delaying receiving duplicate LSP packets.
no min-lsp-arrival [**level-1 | level-2**]

Parameter Description

Parameter	Description
level-1	Applies the configuration to the Level-1 IS-IS system.
level-2	Applies the configuration to the Level-2 IS-IS system.
maximum-interval	Specifies the minimum interval for receiving two consecutive duplicate LSP packets. The value range is **1** to **120** in seconds.
initial-interval	Specifies the interval for receiving a duplicate LSP packet for the first time. The value range is **0** to **60,000** in milliseconds.
hold-interval	Specifies the minimum interval for receiving a duplicate LSP packet for the second time. The value range is **10** to **60,000** in milliseconds.

Defaults The function of delaying receiving duplicate LSP packets is not supported by default. If no level is specified, on the default value is **level-1-2** default, that is, the configuration takes effect at both Level-1 and Level-2.

Command Mode IS-IS routing process configuration mode

Default Level 14

Usage Guide The interval for receiving a duplicate LSP packet for the first time is ***initial-interval***. When the interval for receiving duplicate LSP packets is less than ***maximum-interval***, the interval for receiving a duplicate LSP packet for the second time becomes ***hold-interval***, and a corresponding penalty is added to this interval: The next interval for receiving a duplicate LSP packet is twice the previous interval for receiving the same LSP packet until this interval reaches ***maximum-interval***. Then, the interval for receiving duplicate LSP packets is always ***maximum-interval***. When the network becomes stable, the interval for receiving a duplicate LSP packet becomes greater than ***maximum-interval***, and the interval for receiving a duplicate LSP packet is restored to ***initial-interval***.
Link changes have high requirements for convergence. The initial interval can be set to a small value.

The preceding parameters can also be adjusted to larger values to reduce CPU consumption.

⚠ The value of ***initial-interval*** cannot be greater than that of ***maximum-interval***. Otherwise, the value of ***initial-interval*** will be used as the value of ***maximum-interval***.

⚠ The value of ***hold-interval*** cannot be greater than that of ***maximum-interval***. Otherwise, the value of ***hold-interval*** will be used as the value of ***maximum-interval***.

⚠ The value of ***initial-interval*** cannot be greater than that of ***hold-interval***. Otherwise, the value of ***initial-interval*** will be used as the value of ***hold-interval***.

Configuration Examples The following example sets the minimum interval for receiving two duplicate LSP packets to 10 seconds, the interval for receiving a duplicate LSP packet for the first time to 100 ms, and the interval for receiving a duplicate LSP packet for the second time to 200 ms.

```
Ruijie(config)# router isis
Ruijie(config-router)# min-lsp-arrival 10 100 200
```

4.62 metric-style

Use this command to set the metric style. Use the **no** form of this command to restore the default metric style.

metric-style { **narrow** [**transition**] | **wide** [**transition**] | **transition** } [**level-1** | **level-1-2** | **level-2** |]

no metric-style { **narrow** [**transition**] | **wide** [**transition**] | **transition** } [**level-1** | **level-1-2** | **level-2** |]

Parameter Description

Parameter	Description
narrow	Uses the old metric style with the router interface metric ranging from 1 to 63.
wide	Uses the new metric style with the router interface metric ranging from 1 to 16777214
transition	Allows the router to send and receive the new and old metric style.
level-1	This metric-style on the Level-1 circuit.
level-2	This metric-style applies on the Level-2 circuit.
level-1-2	This metric-style applies on the Level-1-2 circuit.

Defaults By default, the metric-style is narrow.

Command Mode IS-IS routing process configuration mode

Usage Guide The metric value of the interface is specified by the **isis metric** *metric* when the metric-style is set to narrow, while the metric value is specified by the **isis wide-metric** *metric* in case that the metric-style is set to wide or **transition**.

Configuration Examples

```
Ruijie# configure terminal
Ruijie(config)# router isis
Ruijie(config-router)# metric-style wide
```

Related Commands

Command	Description
isis metric	Sets the metric of the interface.
isis wide-metric	Sets the wide metric of the interface.

Platform Description N/A

4.63 multi-topology

Use this command to enable IS-IS to support IPv6 unicast topology. Use the **no** form of this command to restore the default setting.

multi-topology [**transition**]

no multi-topology [**transition**]

Parameter Description

Parameter	Description
transition	Configures the MT transition mode.

Defaults By default, multitopology is not configured, namely, IS-IS does not support IPv6 unicast topology.

Command Mode IS-IS address-family IPv6 configuration mode

Usage Guide

1. When this command is not configured, IPv4 and IPv6 share the same IS-IS physical topology, which is also called default topology.
2. If the **transition** parameter is not specified, the device runs in multi-topology mode, the IS-IS v4 process works in the default topology while the IS-IS v6 process works in the IPv6 unicast topology.
3. If the **transition** parameter is specified, the device runs in multi-topology transition mode and the IS-IS v6 process runs in both the default topology and IPv6 unicast topology.

The above three configurations are exclusive.

The device which runs in multi-topology transition mode can transmit the multi-topology TLV and the default topology TLV. The multi-topology transition mode can be applied in incremental deployment to ensure smooth network migration. However, this mode may cause leaking of routes between the default topology and IPv6 unicast topology. Be careful to configure multi-topology transition mode, as this configuration may lead to network problems such as route blackhole and network loop.

Before you configure this command, you need to set the metric style as wide or transition mode. Configuring the metric style as narrow and configuring only one Level to support wide or transition mode will disable the multitopology routing (MTR) function.

Configuration Examples The following example configures multi-topology.

```
Ruijie(config)# router isis
Ruijie(config-router)# address-family ipv6
Ruijie(config-router-af)# multi-topology
```

Related Commands

Command	Description
router isis	Creates IS-IS instances.

Platform Description N/A

4.64 net

Use this command to set the IS-IS NET (Network Entry Title) address. Use the **no** form of this command to delete this NET address.

net *net-address*

no net *net-address*

Parameter Description

Parameter	Description
net-address	The format of net-address is shown as below: XX.XXXX.YYYY.YYYY.YYYY.00, the XX…XXXX is the area address and the YYYY.YYYY.YYYY is the system ID.

Defaults By default, no NET address is set.

Command Mode IS-IS routing process configuration mode

Usage Guide This command is used to set the Area ID and System ID for the IS-IS.

Up to three NET addresses are allowed to be set by default, namely three addresses with different Area can be set. However, the System ID must be the same.

Configuration Examples

```
Ruijie# configure terminal
Ruijie(config)# router isis
Ruijie(config-router)# net 49.0000.0001.0002.0003.00
```

Related Commands

Command	Description
router isis	Creates IS-IS instances.

Platform N/A

Description

4.65 nsr

Use this command to enable the NSR function for the current IS-IS instance.
nsr

Use the **no** form of this command to restore the default configuration.
no nsr

Parameter Description

Parameter	Description
N/A	N/A

Defaults The NSR function is disabled by default.

Command Mode IS-IS routing process configuration mode

Default Level 14

Usage Guide The Nonstop Routing (NSR) backs up relevant IS-IS information from the master Supervisor Engine to the slave Supervisor Engine of the distributed device. In this way, the device can automatically recover the link status and re-generate a route upon active/standby switchover, without requiring assistance from neighbor devices during the recovery. Information such as the neighbor relationship and link status needs to be backed up.

For the same IS-IS process, either NSP or GR can be enabled because they are mutually exclusive.

The switchover of distributed devices takes a period of time. If the IS-IS neighbor keepalive duration is shorter than the switchover duration, the IS-IS neighbor relationship with the neighbor device is removed, and the services are interrupted during the switchover. Therefore, it is recommended to set the IS-IS neighbor keepalive duration to be not less than the default value when the NSR function is enabled. When Fast Hello is enabled, the IS-IS neighbor keepalive duration is less than 1 second and the IS-IS neighbor relationship times out during the switchover, causing NSR failures. Therefore, it is recommended to disable Fast Hello when NSR is enabled.

By default, if the DIS is a Ruijie device, the neighbor relationship between the neighbor device and the Ruijie device is maintained for 10 seconds at most (the DIS interface sends one HELLO packet every 3.3 seconds). However, the active/standby switchover of Ruijie devices takes at least 7 seconds. If the switchover takes place when the interface is to send a HELLO packet, the period for the neighbor device to receive a HELLO packet again may be greater than 10 seconds, and neighbor relationship flapping occurs on the neighbor device. To avoid neighbor relationship flapping, when NSR is enabled, increase the time for maintaining the neighbor relationship with the neighbor device that sends HELLO packets by 10 seconds.

Configuration Examples The following example configures the NSR function.

```
Ruijie(config)# router isis 1
Ruijie(config-router)# nsr
```

4.66 passive-interface

Use this command to configure the passive interface. Use the **no** form of this command to remove the passive interface.

passive-interface [**default**] { *interface-type interface-number* }

no passive-interface [**default**] { *interface-type interface-number* }

Parameter Description

Parameter	Description
default	Configures IS-IS disabled interfaces as passive.
interface-type	Indicates the interface type.
interface-number	Indicates the interface number.

Defaults The passive interface is not configured by default.

Command Mode IS-IS routing process configuration mode

Usage Guide Use this command to disable the interface to receive and send the IS-IS packets, but to advertise the IP address of the interface.

After the **default** option is configured, if the number of IS-IS disabled interfaces exceeds 255, the first 255 interfaces are configured as passive and the remaining interfaces are non-passive.

Configuration Examples The following example configures interface GigabitEthernet 0/0 as passive.

```
Ruijie(config)# router isis 1
Ruijie(config-router)# passive-interface GigabitEthernet 0/0
```

Related Commands

Command	Description
router isis	Creates IS-IS instances.

Platform Description N/A

4.67 redistribute

Use this command to redistribute the routes from one routing protocol into another routing protocol. Use the **no** form of this command to delete the redistribution.

redistribute { **bgp** | **ospf** *process-id* **match** { **internal** | **external** [**1** | **2**] | **nssa-external** [**1 | 2**] }] |

rip | **connected** | **static**} [**metric** *metric-value*] [**metric-type** *type-value*] [**route-map** *map-tag*] [**level-1** | **level-1-2** | **level-2**]
no redistribute { **bgp** | **ospf** *process-id* [**match** { **internal** | **external** [**1** | **2**] | **nssa-external** [**1** | **2**] }] | **rip** | **connected** | **static** } [**metric** *metric-value*] [**metric-type** { **internal** | **external** }] [**route-map** *map-tag*] [**level-1 | level-1-2** | **level-2**]

Parameter Description

Parameter	Description
process-id	OSPF process ID, in the range of 1 to 65535.
match { **internal**	**external** [**1**	**2**]	**nssa-external** [**1**	**2**] }	Redistributes the OSPF routes to perform the filtering on the subtype of the OSPF routes. If the match option is not specified, all routes of the ospf subtype by default are received. If the 1 or 2 followed by the **match external** is not specified, then redistribute the route of the OSPF **external1** and **external 2**. if the 1 or 2 following the **match nssa-external** is not specified, then redistribute the routes of OSPF **nssa-external 1** and **nssa-external 2**.
metric *metric-value*	Sets the metric value of redistributing the route, in the range of 0 to 4261412864. If the metric option is not specified, the external metric value is used.
metric-type { **internal**	**external** }	Sets the metric type of redistributing the route. **internal**：use the internal metric type. **external**：use the external metric type. If the metric-type is not specified, the **internal** type is used by default.
route-map *map-tag*	Sets the route-map during the external routes redistribution, which is used to filter the redistributed routes or set attributions of the routes. The name of *map-tag* shall not be over 32 characters. No route-map is configured by default.
level-1	**level-1-2**	**level-2**	Specifies the Level of receiving the redistributed routing information. If the Level is not specified, it is defaulted to be redistributed into the Level-2 . The format is shown as below: **level-1**：redistribute into the Level-1 **level-1-2**: redistribute into both Level-1 and Level-2. **level-2**：redistribute into the Level-2.

Defaults By default, no redistribution is configured.

Command Mode IS-IS routing process configuration mode , IS-IS address-family ipv6 mode

Usage Guide Configure "**no redistritbue** { **bgp** | **ospf** *processs-id* | **rip** | **connected** | **static** }" to disable protocol redistribution. If "**no redistribute**" is followed by any other parameter, it means that this parameter is restored to the default setting instead of disabling protocol redistribution. For example: "**no redistribute bgp**" will disable bgp redistribution, while "**no redistribute bgp route-map aa**" will

disable route-map aa filtering during redistribution instead of disabling bgp redistribution.
The routing information will be placed into the IP External Reachability Information TLV of LSP when redistributing external route in the IPv4 mode.
The routing information will be placed to the IPv6 Reachable TLV of LSP when redistributing external route in the IPv6 mode.
In the old version of some vendors, after configuring the **metric-type** to the **external**, the redistributed route metric will be added by 64 and then perform the routing according to the metric value during the routing calculation, which violates the protocol. In actual application, the priority of the external route may be higher than that of the internal route. When connecting with these old version of some vendors, the related configuration (such as the **metric** or the **metric-type**)of each device can be modified to ensure that the priority of the internal route is higher than the external.

Configuration Examples

```
Ruijie# configure terminal
Ruijie(config)# router isis
Ruijie(config-router)# redistribute ospf 1 metric 10 level-1
```

Related Commands

Command	Description
redistribute isis [**tag**] **level-2 into level-1**	Redistributes the reachable routing information from Level-2 into Level-1.
redistribute isis [**tag**] **level-1 into level-2**	Redistributes the reachable routing information from Level-1 into Level-2.
route-map	Configures the route map.

Platform Description N/A

4.68 redistribute isis level-2 into level-1

Use this command to redistribute the Level-2 reachable routing information of the IS-IS instance into the Level-1 of current instance. Use the **no** form of this command to remove the redistribution.
redistribute isis [*tag*] **level-2 into level-1** [**route-map** *route-map-name* | **distribute-list** *access-list-name*]
no redistribute isis [*tag*] **level-2 into level-1** [**route-map** *route-map-name* | **distribute-list** *access-list-name*]

Parameter Description

Parameter	Description
tag	Name of the IS-IS instance to be redistributed.
route-map *route-map-name*	Sets the route map during the route redistribution, which is used to filter the redistributed routes and set attributions of the routes. Name of the *route-map-name* shall not be over 32 characters. ● No route-map is configured by default.

distribute-list *access-list-name*	● Uses the distribute-list to filter the redistributed routes. Access-list-name is the prefix list associated, it can be the standard, extended or naming prefix list. The format is shown as below: {*<1-99>* | *<100-199>* | *<1300-1999>* | *<2000-2699>* | *acl-name*} ● In the IS-IS address-family ipv6 mode, you can use only the naming prefix list with the format being *acl-name.*

Defaults N/A

Command Mode IS-IS routing process configuration mode or IS-IS **address-family ipv6** mode.

Usage Guide Use the **route-map** or **distribute-list** to filter the Level-2 route of the specified instance to be redistributed. Only the route that meets the condition can be redistributed into the Level-1 of current instance.

⚠ You can only choose one of the two parameters **route-map** and **distribute-list**.

Configure the **no distribute isis** [*tag*] **level-2 into level-1** to disable the specified instance redistribution. If the **no redistribute** is followed by any other parameters, it means that this parameter is restored to the default setting instead of disabling the specified instance redistribution.
For example: "**no redistribute isis** *tag1* **level-2 into level-1**" will disable the isis *tag1* redistribution, while " **no redistritbue isis** *tag1* l**evel-2 into level-1 route-map** *a* " will disable route-map aa filtering during redistribution instead of disabling the isis *tag1* redistribution.

Configuration Examples

```
Ruijie# configure terminal
Ruijie(config)# router isis aa
Ruijie(config-router)# redistribute isis bb level-2 into level-1
```

Related Commands

Command	Description
redistribute	Redistributes the routing information from another routing protocol.
redistribute isis level-1 into level-2	Redistributes the reachable routing information from Level-1 into Level-2.

Platform Description N/A

4.69 redistribute isis level-1 into level-2

Use this command to redistribute the Level-1 reachable routing information of the IS-IS instance into the Level-2 of current instance. Use the **no** form of this command to disable this redistribution.
redistribute isis [*tag*] **level-1 into level-2** [**route-map** *route-map-name* | **distribute-list**

access-list-name]

no redistribute isis [*tag*] **level-1 into level-2** [**route-map** *route-map-name* | **distribute-list** *access-list-name*]

Parameter Description

Parameter	Description
tag	Name of the IS-IS instance.
route-map *route-map-name*	Sets the route map during the route redistribution, which is used to filter the redistributed route and set attributions of this route. Name of the *route-map-name* shall not be over 32 characters. No **route-map** is configured by default.
distribute-list *access-list-name*	Uses the **distribute-list** to filter the redistributed routes. Access-list-name is the prefix list associated, it can be the standard, extended or naming prefix list. The format is shown as below: {*<1-99>* | *<100-199>* | *<1300-1999>* | *<2000-2699>* | *acl-name*} In the IS-IS **address-family ipv6** mode, you can use only the naming prefix list with the format being *acl-name.*

Defaults

If the IS-IS Level-2 instance exists, all IS-IS Level-1 routes are by default redistributed into the IS-IS Level-2 instace.

Command Mode

IS-IS routing process configuration mode or IS-IS **address-family ipv6** mode.

Usage Guide

Use the **route-map** or **distribute-list** to filter the Level-1 route of the specified instance to be redistributed. Only the route that meets the condition can be redistributed into the Level-1 of current instance.

⚠ You can only choose one of the two parameters **route-map** and **distribute-list**.

Configure the **no distribute isis** [*tag*] **level-2 into level-1** to disable the specified instance redistribution. If the **no redistribute** is followed by any other parameters, it means that this parameter is restored to the default setting instead of disabling the specified instance redistribution.
For example: *"***no redistribute isis** *tag1* **level-1 into level-2***"* will disable the isis tag1 redistribution, while " **no redistritbue isis** *tag1* l**evel-1 into level-2 route-map** aa " will disable route-map aa filtering during redistribution instead of disabling the isis tag1 redistribution.

Configuration Examples

```
Ruijie# configure terminal
Ruijie(config)# router isis aa
Ruijie(config-router)# redistribute isis bb level-1 into level-2
```

Related Commands

Command	Description
redistribute	Redistributes the routing information from another routing protocol.

redistribute isis level-2 into level-1	Redistributes the reachable routing information from Level-2 into Level-1.

Platform Description N/A

4.70 router isis

Use this command to create the IS-IS instance. Use the **no** form of this command to delete this instance.

router isis [*tag*]

no router isis [*tag*]

Parameter Description

Parameter	Description
tag	Instance name

Defaults By default, no IS-IS instance is configured.

Command Mode Global configuration mode

Usage Guide Use this command to initialize the IS-IS instance and enter the IS-IS routing process configuration mode.

The IS-IS instance will not be executed unless one NET address is configured at least.

When enabling the IS-IS routing process with the parameter *tag*, the parameter *tag* will be used as well when disabling the IS-IS routing process.

By default, the CPU protection is enabled on the switch, so that the number of packets corresponding to the destination group addresses of ISIS (AllISSystems, AllL1ISSystems, AllL2ISSystems) is limited when they are sent to the CPU, for example , the default limited value is 400pps. The number of packets received by the switch may be larger than the default value if there are many neighbors or the interval for sending Hello packets is short, resulting in continual vibration of the adjacent relation. In this case, you need to raise the limit of IS-IS packets using the global commands **cpu-protect type isis-is pps**, **cpu-protect type isis-l1is pps** and **cpu-protect type isis-l2is pps**.

Configuration Examples

```
Ruijie# configure terminal
Ruijie(config)# router isis
```

Related Commands

Command	Description
ip router isis	Enables the IS-IS IPv4 routing protocol on the interface.
ipv6 router isis	Enables the IS-IS IPv6 routing protocol on the interface.

net	Sets the NET address.

Platform Description N/A

4.71 set-overload-bit

Use this command to instruct a neighbor not to use the local IS-IS node as a transit device for forwarding data.
set-overload-bit [**on-startup {** *seconds* | **wait-for-bgp** [*bgpseconds*] }] [**suppress** { [**interlevel**] [**external**] }] [**level-1** | **level-2**]

Use the **no** form of this command to disable the function of instructing a neighbor not to use the local IS-IS node as a transit device for forwarding data.
no set-overload-bit [**level-1** | **level-2**]

Parameter Description

Parameter	Description
on-startup *seconds*	Indicates that an IS-IS node automatically enters the OVERLOAD state after restart.
seconds	***seconds*** is the duration of the IS-IS node in the OVERLOAD state after restart. The value range is **5** to **86,400** in seconds.
wait-for-bgp	Indicates the duration in which an IS-IS node automatically enters OVERLOAD state and remains in the wait-for-BGP convergence state after restart.
bgpseconds	Indicates the duration to wait for bgp convergence. The value ranges from 5–86,400 in seconds. The default value is 600.
suppress	Indicates that internal routes (IS-IS inter-area routes and intra-area routes) or external routes are not advertised to neighbors when the IS-IS node is in the OVERLOAD state.
interlevel	Indicates that IS-IS inter-area routes and intra-area routes are not advertised to neighbors when the IS-IS node is in the OVERLOAD state. It is used in combination with the **suppress** keyword.
external	Indicates that external routes are not advertised to neighbors when the IS-IS node is in the OVERLOAD state. It is used in combination with the **suppress** keyword.
level-1	Sends LSP packets that carry the OVERLOAD bit only to Level-1 neighbors.
level-2	Sends LSP packets that carry the OVERLOAD bit only to Level-2 neighbors.

Defaults The function of instructing a neighbor not to use the local IS-IS node as a transit device for forwarding data is disabled by default.

Command Mode IS-IS routing process configuration mode

Default Level 14

Usage Guide This command forces a IS-IS node to set the OVERLOAD bit in non-virtual LSP packets, to instruct IS-IS neighbors not to use the local node as a transit device.
If the **on-startup** keyword is carried, the device automatically enters the OVERLOAD state after restart.
If the **on-startup** keyword is not carried, the device immediately enters the OVERLOAD state upon restart.

The **on-startup** keyword takes effect for only one level.

The OVERLOAD bit is mainly used in the following cases:

- Device overload

The overload of the local IS-IS node, for example, memory insufficiency or CPU full load, may cause incomplete routes in the local routing table or no resource for data forwarding. You can set the OVERLOAD bit in LSP packets to instruct neighbors not to use the local node as a transit device.
In this case, the **on-startup** keyword is not carried in the configuration. The OVERLOAD bit is manually set or cancelled. You must manually cancel this command after the local IS-IS node restores to the normal state. Otherwise, the local IS-IS node is always in the OVERLOAD state

- Instantaneous black hole

In the scenario described in RFC3277, the IS-IS converges faster than BGP does. After an IS-IS node restarts, the route fails instantaneously, that is, instantaneous black hole occurs. You can set the OVERLOAD bit in LSP packets to instruct neighbors not to use the local node as a transit device till the specified timer expires.
In this case, the configuration must carry the **on-startup** field. The OVERLOAD bit is automatically set or cancelled by the IS-IS node based on the configuration.
After the **on-startup** field is selected, the IS-IS node automatically enters the instantaneous black hole state after restart. After a new neighbor relationship is established, the IS-IS node immediately sends the LSP packet that carries the OVELOAD bit to notify the neighbor that the local device enters the instantaneous black hole state (or OVERLOAD state) and that the local node cannot be used as a transit device.
When the specified timer expires, the IS-IS node immediately sends the LSP packet without the OVERLOAD bit to notify the neighbor that the local device is no longer in the instantaneous state (or OVERLOAD state) and can be used as a transit device.
The timer time needs to be set based on the number of routes in the network. If there are many routes, set it to a large value; if there are a few routes, set it to a small value.

- The local IS-IS node is not intended to be used for forwarding real data

If the local IS-IS node needs to be connected to the production network for testing or other function requirements and it is not intended to be used for forwarding real data in the network, you can set the OVERLOAD bit in LSP packets to instruct neighbors not to use the local device as a transit device.
In this case, the **on-startup** field is not carried in the configuration and the OVERLOAD bit is manually

set or cancelled.
You can configure **suppress** as required to restrict the routing information carried in LSP packets in the OVERLOAD state, for example, suppress internal routes and external routes and advertise only local direct routes.

Configuration Examples

The following example sets an IS-IS node to immediately enter the instantaneous black hole state after restart till the specified timer expires (set the specified waiting time to 300 seconds) and advertises only local direct routes to neighbors.

```
Ruijie(config)# router isis
Ruijie(config-router)#set-overload-bit on-startup 300 suppress interlevel
external
```

The following example connects the local IS-IS node to the production network as a test device and set its not to forward real data of the production network, to avoid impact on production.

```
Ruijie(config)# router isis
Ruijie(config-router)#set-overload-bit suppress interlevel external
```

4.72 spf-interval

Use this command to set the minimal interval for the SPF calculation. Use the **no** form of this command to restore the default minimal interval.
spf-interval [**level-1 | level-2**] *maximum-interval* [*initial-interval hold-interval*]
no spf-interval [**level-1 | level-2**]

Parameter Description

Parameter	Description
level-1	Applies the configuration only to Level-1.
level-2	Applies the configuration only to Level-2.
maximum-interval	Indicates the maximum interval for performing two consecutive SPF calculations. The value range is **1** to **120** (in seconds). The default value is **10**.
initial-interval	Indicates the waiting time for performing the SPF calculation for the first time. The value range is **0** to **60000** (in milliseconds). The default value is **50**.
hold-interval	Indicates the minimum interval for performing the SPF calculation for the second time. The value range is **10** to **60000** (in milliseconds). The default value is **200**.

Defaults

By default, this command is not configured.
The default SPF interval is 10 seconds, which takes effect at both Level-1 and Level-2.

Command Mode

IS-IS routing process configuration mode

Usage Guide Increasing the maximum interval for performing SPF calculations can avoid frequent SPF calculations and waste of CPU resources. However, a larger minimum interval also leads to slower responses to route changes.

The waiting time for performing the SPF calculation for the first time is the initial interval. If the network becomes unstable, the SPF calculation interval is less than the maximum interval, and the interval for performing the SPF calculation for the second time becomes the hold interval. A corresponding penalty is added to this interval: The next interval for the SPF calculation doubles the previous interval for the same SPF calculation, until the SPF calculation interval reaches the maximum interval. Subsequent SPF calculations are performed at the maximum interval. When the network becomes stable, the interval for performing the SPF calculation becomes greater than the maximum interval, and the waiting time for performing the SPF calculation is restored to the initial interval.

Link changes have high requirements for convergence. The initial interval can be set to a small value. The preceding parameters can also be adjusted to larger values to reduce CPU consumption.

The value of **initial-interval** cannot be greater than that of **maximum-interval**. Otherwise, the value of **initial-interval** will be used as the value of **maximum-interval**.

The value of **hold-interval** cannot be greater than that of **maximum-interval**. Otherwise, the value of **hold-interval** will be used as the value of **maximum-interval**.

The value of **initial-interval** cannot be greater than that of **hold-interval**. Otherwise, the value of **initial-interval** will be used as the value of **hold-interval**.

Configuration Examples The following example sets the maximum interval for generating two duplicate SPF packets to 5 seconds, the interval for generating a duplicate SPF packet for the first time to 100 ms, and the interval for generating a duplicate SPF packet for the second time to 200 ms.

```
Ruijie(config)# router isis
Ruijie(config-router)# spf-interval 5 100 200
```

The following example sets the maximum interval for generating two duplicate SPF packets to 10 seconds.

```
Ruijie(config)# router isis
Ruijie(config-router)# spf-interval 10
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.73 summary-address

Use this command to configure the IPv4 aggregation route. Use the **no** form of this command to delete the aggregation route.

summary-address *address/prefix* [**level-1** | **level-2** | **level-1-2**]

no summary-address *address/prefix*

Parameter Description

Parameter	Description
address / prefix	Aggregation network address and the IP prefix length of the aggregation network address, in the format of A.B.C.D/<0-32>
level-1	Applies to the Level-1only.
level-1	Applies to the Level-2 only.
level-1-2	Applies to both Level-1 and Level-2.

Defaults By default, no aggregation route is configured.
If the Level is not specifief, it is defaulted to take effect on the Level-2.

Command Mode IS-IS routing process configuration mode

Usage Guide With the aggregation route configured, if there is any reachable address or reachable network segment route in the aggregation route, it will publish the aggregation route instead of the detailed route.

Configuration Examples

```
Ruijie# configure terminal
Ruijie(config)# router isis
Ruijie(config-router)# summary-address 10.10.0.0/24 level-1-2
```

Related Commands

Command	Description
summary-prefix	Configures the IPv6 aggregation route.

Platform Description N/A

4.74 summary-prefix

Use this command to configure the IPv6 aggregation route. Use the **no** form of this command to delete the aggregation route.
summary-prefix *ipv6-prefix/prefix-length* [**level-1** | **level-2** | **level-1-2**]
no summary-address *ipv6-prefix/prefix-length* [**level-1** | **level-2** | **level-1-2**]

Parameter Description

Parameter	Description
ipv6-prefix / prefix-length	Aggregation network address and the IP prefix length of the aggregation network address.
level-1	Applies to the Level-1 only.

level-2	Applies to the Level-2 only.
level-1-2	Applies to both Level-1 and Level-2.

Defaults By default, no aggregation route is configured.
If the Level is not specified, it is defaulted to take effect on the Level-2.

Command Mode Address-family ipv6 mode

Usage Guide With the aggregation route configured, if there is any reachable address or reachable network segment route in the aggregation route, it will publish the aggregation route instead of the detailed route.

Configuration Examples

```
Ruijie# configure terminal
Ruijie(config)# router isis
Ruijie(config-router)# address-family ipv6
Ruijie (config-router-af)# summary-prefix 1000::/96 level-1-2
```

Related Commands

Command	Description
summary-address	Configures the IPv4 aggregation route.

Platform Description N/A

4.75 two-way-maintain

Use this command to enable the IS-IS two-way maintenance function.
two-way-maintain

Use the **no** form of this command to disable the IS-IS two-way maintenance function.
no two-way-maintain

Parameter Description

Parameter	Description
N/A	N/A

Defaults The IS-IS two-way maintenance function is enabled by default.

Command Mode IS-IS routing process configuration mode

Default Level 14

Usage Guide In a large-scale network, a large number of packets are sent and received, which occupies lots of CPU and memory resources, causing the delay or discarding of some IS-IS packets. If the time required for processing hello packets exceeds the neighbor relationship maintenance duration, the corresponding neighbor relationship times out and is removed. When the two-way maintenance function is enabled, if a large number of packets exist on the network, the LSP packets, CSNP packets, and PSNP packets from a neighbor in addition to hello packets can also be used to maintain the two-way relationship with the neighbor, preventing the neighbor failure caused by delay or discarding of hello packets.

Configuration Examples The following example disables the IS-IS two-way maintenance function.

```
Ruijie(config)# router isis 1
Ruijie(config-router)# no two-way-maintain
```

4.76 virtual-system

Use this command to configure an additional system ID for fragment extension. Use the **no** form of this command to remove the additional system ID.

virtual-system *system-id*

no virtual-system *system-id*

Parameter Description

Parameter	Description
system-id	Additional system ID. The length is 6 bytes.

Defaults No additional system ID is configured by default.

Command Mode IS-IS routing process configuration mode

Usage Guide Use this command to configure an additional system ID for LSP fragment extension.
The system must be enabled with fragment extension mode and configured with the additional system ID to enable LSP fragment extension.

Configuration Examples The following example configures an additional system ID for fragment extension.

```
Ruijie(config)# router isis
Ruijie(config-router)# virtual-system 0000.0000.0034
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.77 vrf

Use this command to bind the ISIS process with a VRF instance. Use the **no** form of this command to unbind the IS-IS process from the VRF instance.

vrf *vrf-name*

no vrf *vrf-name*

Parameter Description

Parameter	Description
vrf-name	VRF instance name. The VRF instance must be configured.

Defaults No IS-IS process is bound with the VRF instance.

Command Mode IS-IS routing process configuration mode

Usage Guide Before you configure this command, the specified VRF instance must be configured. If you want to build the IS-IS v6 neighbor, the multi-protocol VRF and IPv6 protocol must be enabled.

The following restrictions are for binding IS-IS process with VRF instance:

1. The IS-IS process in the same non-default VRF instance must be configured with a different system ID. The IS-IS process in the different VRF instance can be configured with the same system ID.
2. An IS-IS process can be bound with only one VRF instance. A VRF instance can be bound with multiple IS-IS processes.
3. If a VRF instance bound with an IS-IS changes, the IS-IS enabled interfaces which are bound with the VRF instance and the redistribute configuration in IS-IS routing process configuration mode will be removed.

Configuration Examples The following example binds an IS-IS process with a VRF instance.

```
Ruijie(config)#vrf definition vrf_1
Ruijie(config-vrf)#address-family ipv4
Ruijie(config-vrf-af)#exit-address-family

Ruijie(config)# router isis
Ruijie(config-router)# vrf vrf_1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.78 show clns is-neighbor

Use this command to display all IS neighbors to provide the adjacency relationship of routers.

show clns [*tag*] **is-neighbors** [*IFNAME* | **detail**]

Parameter Description

Parameter	Description
tag	Specifies the IS-IS instance.
IFNAME	Specifies the name of interface.
detail	Displays detailed information of all interfaces.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The output results of the **show clns is-neighbors detail** command are displayed as below:

```
Area (null):
System Id  Type  IP Address   State  Holdtime  Circuit  Interface
r1         L1    1.0.0.2      Up     9         r1.01    VLAN 1
L2    1.0.0.2      Up     9         r1.01    VLAN 1
  Adjacency ID: 1
  Uptime: 00:00:54
  Area Address(es): 49.1111
  IP Address(es): 1.0.0.2
  Level-1 Protocols Supported: IPv4
  Level-2 Protocols Supported: IPv4
```

Related Commands

Command	Description
show clns neighbors	Displays all IS neighbors to provide the router information and the adjacency relationship of terminal system.

Platform Description N/A

4.79 show clns neighbors

Use this command to display all IS neighbors to provide the router information and the adjacency relationship of terminal system.

show clns [*tag*] **neighbors** [*IFNAME* | **detail**]

Parameter Description

Parameter	Description
tag	Specifies the IS-IS instance.
IFNAME	Specifies the name of the interface.
detail	Displays detailed information of all interfaces.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The output results of the **show clns neighbors detail** command are displayed as below:

```
Area (null):
System Id     SNPA              State  Holdtime  Type Protocol
Interface
r1            00d0.f822.33ad    Up     7         L1   IS-IS
VLAN 1
Up    7         L2   IS-IS
VLAN 1
  Adjacency ID: 1
  Uptime: 00:02:47
  Area Address(es): 49.1111
```

Related Commands

Command	Description
show clns is-neighbors	Displays all IS neighbors to provide the router adjacency relationship.

Platform Description N/A

4.80 show isis counter

Use this command to display various statistics of IS-IS.

show isis [*tag*] **counter**

Parameter Description

Parameter	Description
tag	Specifies the IS-IS instance.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The output results of the **show clns neighbors details** are displayed as below:

```
Ruijie# show isis counter
Area (null):
IS-IS Level-1 isisSystemCounterEntry:
isisSysStatCorrLSPs: 0
isisSysStatAuthTypeFails: 0
isisSysStatAuthFails: 0
isisSysStatLSPDbaseOloads: 0
isisSysStatManAddrDropFromAreas: 0
isisSysStatAttmptToExMaxSeqNums: 0
isisSysStatSeqNumSkips: 0
isisSysStatOwnLSPPurges: 0
isisSysStatIDFieldLenMismatches: 0
isisSysStatMaxAreaAddrMismatches: 0
isisSysStatPartChanges: 0
isisSysStatSPFRuns: 30
IS-IS Level-2 isisSystemCounterEntry:
isisSysStatCorrLSPs: 0
isisSysStatAuthTypeFails: 0
isisSysStatAuthFails: 0
isisSysStatLSPDbaseOloads: 0
isisSysStatManAddrDropFromAreas: 0
isisSysStatAttmptToExMaxSeqNums: 0
isisSysStatSeqNumSkips: 0
isisSysStatOwnLSPPurges: 0
isisSysStatIDFieldLenMismatches: 0
isisSysStatMaxAreaAddrMismatches: 0
isisSysStatPartChanges: 0
isisSysStatSPFRuns: 30
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.81 show isis database

Use this command to display the LSP database.

show isis [*tag*] **database** [*FLAGS* | *LEVEL* | *LSPID*]

Parameter Description

Parameter	Description
tag	Specifies the IS-IS instance.
FLAGS	The format is displayed as below: detail verbose detail: detailed information Verbose: more detailed information than the detail.
LEVEL	The format is displayed as below: l1 | l2 | level-1 | level-2 l1 and level-1：specify the LSP database of the Level-1. l2 and level-2：specify the LSP database of the Level-2
LSPID	Specifies the ID number of LSP to show the corresponding LSP information only.

Defaults N/A

Command Mode Privileged EXEC mode/ global configuration mode

Usage Guide N/A

Configuration Examples The output results of the **show isis database detail** command are displayed as below:

```
Ruijie# show isis database detail
Area (null):
IS-IS Level-1 Link State Database:
LSPID          LSP Seq Num  LSP Checksum  LSP Holdtime    ATT/P/OL
Ruijie.00-00  * 0x00000007  0xCDD5       1011            0/0/0
  Area Address: 49.1111
  NLPID:       0xCC
  Hostname:    Ruijie
  IP Address:   1.0.0.1
  Metric:   10       IS r1.01
  Metric:   10       IP 1.0.0.0 255.255.255.0
r1.00-00        0x00000006   0xA771       1032           0/0/0
  Area Address: 49.1111
  NLPID:       0xCC
  Hostname:    r1
  IP Address:   1.0.0.2
```

```
  Metric:   10        IS r1.01
  Metric:   10        IP 1.0.0.0 255.255.255.0
r1.01-00        0x00000002   0x062A       989             0/0/0
  Metric:   0         IS r1.00
  Metric:   0         IS Ruijie.00

IS-IS Level-2 Link State Database:
LSPID          LSP Seq Num  LSP Checksum  LSP Holdtime     ATT/P/OL
Ruijie.00-00  * 0x0000000A  0xC7D8        1033            0/0/0
  Area Address: 49.1111
  NLPID:       0xCC
  Hostname:    Ruijie
  IP Address:   1.0.0.1
  Metric:   10        IS r1.01
  Metric:   10        IP 1.0.0.0 255.255.255.0
r1.00-00        0x00000006  0xA771        1032             0/0/0
  Area Address: 49.1111
  NLPID:       0xCC
  Hostname:    r1
  IP Address:   1.0.0.2
  Metric:   10        IS r1.01
  Metric:   10        IP 1.0.0.0 255.255.255.0
r1.01-00        0x00000002  0x062A        989             0/0/0
  Metric:   0         IS r1.00
  Metric:   0         IS Ruijie.00
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.82 show isis graceful-restart

Use this command to display the status information related to the IS-IS GR.

show isis [*tag*] **graceful-restart**

Parameter Description

Parameter	Description
tag	IS-IS instance name

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the GR information of the IS-IS default instance in the global configuration mode.

```
Ruijie(config)# show isis graceful-restart
Graceful-restart: enabled, graceful-period: 60s, Level timer: 60, Interface timer: 3s.
Graceful-restart Helper: enabled.
```

Related Commands

Command	Description
graceful-restart	Enables the IS-IS GR Restart capability.
graceful-restart grace-period	Configures the maximum interval of the grace-restart.
graceful-restart helper disable	Disables the IS-IS GR Help capability.
graceful-restart	Enables the IS-IS GR Restart capability.

Platform Description N/A

4.83 show isis hostname

Use this command to display the mapping relation between the router name and system ID.

show isis [*tag*] **hostname**

Parameter Description

Parameter	Description
tag	Specifies the IS-IS instance.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The output results of the **show isis hostname** command are shown as below:

```
Ruijie# show isis hostname
System ID      Dynamic Hostname
5555.5555.5555 Ruijie
1111.1111.1111 r1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.84 show isis ipv6 topology

Use this command to display information about the IPv6 unicast topology to which an IS-IS router is connected.

show isis [*tag*] **ipv6 topology** [**l1** | **l2** | **level-1** | **level-2**]

Parameter Description

Parameter	Description
tag	IS-IS instance
l1	Topology of a specified Level-1 router
level-1	Topology of a specified Level-1 router
l2	Topology of a specified Level-2 router
level-2	Topology of a specified Level-2 router

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays the IPv6 unicast topology information.

```
Ruijie#show isis ipv6 topology
Area (null):
IS-IS paths to level-1 routers
System Id    Metric   Next-Hop   SNPA            Interface
r1          10      r1        00d0.f822.33ad    GigabitEthernet 0/0
Ruijie      --
IS-IS paths to level-2 routers
System Id    Metric   Next-Hop   SNPA            Interface
r1          10      r1        00d0.f822.33ad    GigabitEthernet 0/0
Ruijie      --
```

Field description:

Field	Description
Area	Instance tag

System Id	System ID
Metric	Metric value
Next-Hop	Next hop
SNPA	SNPA address
Interface	Interface name

4.85 show isis interface

Use this command to display the information about IS-IS interface.

show isis [*tag*] **interface** [*interface-type interface-number*] [*counter*]

Parameter Description

Parameter	Description
tag	Specifies the IS-IS instance name.
interface-type interface-number	Specifies the Interface name.
counter	Specifies the number of packages and events.

Defaults N/A

Command Mode Privileged EXEC mode, global configuration mode or interface configuration mode.

Usage Guide N/A

Configuration Examples The following example displays the IS-IS interface.

```
Ruijie# show isis interface
Area (null):
VLAN 1 is up, line protocol is up
  Routing Protocol: IS-IS ((null))
    Network Type: Broadcast
    Circuit Type: level-1-2
    Local circuit ID: 0x01
    Extended Local circuit ID: 0x00000001
    Local SNPA: 00d0.f822.33ab
    IP interface address:
      1.0.0.1/24
    Level-1 Metric: 10/10, Priority: 64, Circuit ID: r1.01
    Number of active level-1 adjacencies: 1
    Level-2 Metric: 10/10, Priority: 64, Circuit ID: r1.01
    Number of active level-2 adjacencies: 1
    Next IS-IS LAN Level-1 Hello in 5 seconds
    Next IS-IS LAN Level-2 Hello in 5 seconds
```

```
   BFD Enabled (Anti-congestion)
   Eligible to backup traffic
```

The following example displays the statistics of the IS-IS interface.

```
Ruijie# show isis interface counter

Area (null):
GigabitEthernet 1/1/0:
   IS-IS LAN Level-1 isisCircuitCounterEntry:
     isisCircAdjChanges: 4
     isisCircNumAdj: 2
     isisCircInitFails: 0
     isisCircRejAdjs: 0
     isisCircIDFieldLenMismatches: 0
     isisCircMaxAreaAddrMismatches: 0
     isisCircAuthTypeFails: 0
     isisCircAuthFails: 0
     isisCircLanDesISChanges: 1
   IS-IS LAN Level-2 isisCircuitCounterEntry:
     isisCircAdjChanges: 4
     isisCircNumAdj: 2
     isisCircInitFails: 0
     isisCircRejAdjs: 0
     isisCircIDFieldLenMismatches: 0
     isisCircMaxAreaAddrMismatches: 0
     isisCircAuthTypeFails: 0
     isisCircAuthFails: 0
     isisCircLanDesISChanges: 1
   IS-IS Level-1 isisPacketCounterEntry:
     isisPacketCountIIHello in/out: 187/278
     isisPacketCountLSP in/out: 10/7
     isisPacketCountCSNP in/out: 0/92
     isisPacketCountPSNP in/out: 0/0
     isisPacketCountUnknown in/out: 0/0
   IS-IS Level-2 isisPacketCounterEntry:
     isisPacketCountIIHello in/out: 186/286
     isisPacketCountLSP in/out: 17/9
     isisPacketCountCSNP in/out: 1/91
     isisPacketCountPSNP in/out: 0/0
     isisPacketCountUnknown in/out: 0/0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.86 show isis mesh-groups

Use this command to display the mesh-group configurations on each interface.

show isis [*tag*] **mesh-groups**

Parameter Description

Parameter	Description
tag	Specifies the IS-IS instance.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the mesh groups.

```
Ruijie# show isis mesh-groups
Mesh group (blocked)
FastEthernet 1/1
Mesh group 1 :
FastEthernet 1/0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.87 show isis neighbors

Use this command to display the IS-IS neighbors..

show isis [*tag*] **neighbors** [**detail**]

Parameter Description

Parameter	Description
tag	Displays the IS-IS instance.

detail	Displays the detailed information of all interfaces.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays details of IS-IS neighbors.

```
Ruijie# show isis neighbors detail
Area (null):
System Id  Type  IP Address    State   Holdtime  Circuit  Interface
r1         L1    1.0.0.2       Up      9         r1.01    VLAN 1
L2    1.0.0.2      Up      9         r1.01    VLAN 1
  Adjacency ID: 1
  Uptime: 00:06:25
  Area Address(es): 49.1111
  IP Address(es): 1.0.0.2
  Level-1 Protocols Supported: IPv4
  Level-2 Protocols Supported: IPv4
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.88 show isis nsr

Use this command to display the NSR information about an IS-IS system.

show isis [*tag*] **nsr**

Parameter Description

Parameter	Description
tag	IS-IS instance.

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays the NSR status information about an IS-IS system.

```
Ruijie# show isis nsr
Area (null):
  NSR: enable
    NSR status: running
    NSR flags: backup
    NSR sync: end

Area 1:
  NSR: disable
    NSR status: not running
    NSR flags: not backup
    NSR sync: not end
```

Field description:

Field	Description
Area	Instance tag
NSR	Indicates whether NSR is configured for the instance
NSR status	NSR operating status
NSR flags	NSR flag
NSR sync	Indicates whether batch synchronization of NSR information is completed.

4.89 show isis virtual-neighbors

Use this command to display the virtual system neighbor information of an IS-IS system.

show isis [*tag*] **virtual-neighbors**

Parameter Description

Parameter	Description
tag	*IS-IS instance.*

Defaults -

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration

```
Ruijie# show isis virtual-neighbors
```

Examples

```
Area (null):
Virtual System Id          Type        State
1111.1111.1111             L1          DOWN
                          L2          UP
2222.2222.2222             L1          DOWN
                          L2          UP
```

Field description:

Field	Description
Area	Instance tag
Virtual System Id	Virtual system ID
Type	Neighbor type
State	Neighbor status. **UP** indicates the level at which the extended LSP fragment is created.

4.90 show isis protocol

Use this command to display relevant protocol information about an IS-IS system.

show isis [*tag*] **protocol**

Parameter Description

Parameter	Description
tag	IS-IS instance.

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays relevant protocol information about an IS-IS system.

```
Ruijie# show isis protocol
IS-IS Router: (null)
 Binding VRF: vrf
 Mib-Binding: off
 System ID: 0000.0000.0036   IS-type: level-1-2
 Virtual System ID:
   1111.1111.1111, 2222.2222.2222
 Manual area address(es):
   49.0001, 49.0003
 Interfaces supported by IS-IS:
   GigabitEthernet 0/0, GigabitEthernet 0/1
```

```
Redistributing IPv4:
  isis 1, isis 2
Redistributing IPv6:
  isis 3, isis 4
Distance: 115
Generate narrow metrics:  Level-1-2
Accept narrow metrics:    Level-1-2
Generate wide metrics:    none
Accept wide metrics:      none
NSR: enable
Two-way-maintain: enable
```

Field description:

Field	Description
IS-IS Router	Instance tag
Binding VRF	Name of the VRF bound to the instance
Mib-Binding	Indicates whether the instance is bound with SNMP.
System ID	System ID
IS-type	Level type supported by the instance
Virtual System ID	Extended system ID
Manual area address(es)	Area ID
Interfaces supported by IS-IS	Interface associated with the instance
Redistributing IPv4	Source of redistributed IPv4 routes
Redistributing IPv6	Source of redistributed IPv6 routes
Distance	IS-IS management weight
Generate narrow metrics	Type of the generated narrow metrics
Accept narrow metrics	Type of the accepted narrow metrics
Generate wide metrics	Type of the generated wide metrics
Accept wide metrics	Type of the accepted wide metrics
NSR	Indicates whether the NSR function is enabled the instance.
Two-way-maintain	Indicates whether the two-way maintenance function is enabled for the instance.

4.91 show isis topology

Use this command to display the topology of the IS-IS router connection.

show isis [*tag*] **topology** [**l1** | **l2** | **level-1** | **level-2**]

Parameter Description

Parameter	Description
tag	Specifies the IS-IS instance.

l1	Specifies the topology of Level-1.
level-1	Specifies the topology of Level-1.
l2	Specifies the topology of Level-2.
level-2	Specifies the topology of Level-2.

Defaults N/A

Command Mode Privileged EXEC mode/ global configuration mode/ interface configuration mode

Usage Guide N/A

Configuration Examples The following example displays all IS-IS neighbors:

```
Ruijie#show isis topology
Area (null):
IS-IS paths to level-1 routers
System Id    Metric   Next-Hop   SNPA            Interface
r1          10      r1        00d0.f822.33ad    GigabitEthernet 0/0
Ruijie       --
IS-IS paths to level-2 routers
System Id    Metric   Next-Hop   SNPA            Interface
r1          10      r1        00d0.f822.33ad    GigabitEthernet 0/0
Ruijie       --
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5 BGP4 Commands

5.1 address port

Use this command to configure the address and port number of the BMP server. Use the **no** form of this command to delete the address and port number of the BMP server. Use the **default** form of this command to restore the default settings.

address *bmp-server-address* **port** *port-number*

no address *bmp-server-address* **port** *port-number*

default address *bmp-server-address* **port** *port-number*

Parameter Description

Parameter	Description
bmp-server-address	IPv4 or IPv6 address of the BMP server
port-number	Monitoring port number of the BMP server

Defaults The BMP server address and port number are not configured by default.

Command Mode BMP configuration mode

Default Level 14

Usage Guide

Configuration Examples The following example sets the address and port number of the BMP server to **10.0.0.1** and **12345**, respectively.

```
Ruijie(config)# bmp server 1
Ruijie(config-bmpsrvr)#address 10.0.0.1 port 12345
```

Verification Run the **show running-config** command to display the BMP configurations.

Prompt Messages

Common Errors The BMP server address is the local address.

```
% Cannot configure the local system as bmp server
```

Platform Description N/A

5.2 address-family ipv4

Use this command to enter IPv4 address family configuration mode to configure BGP configuration mode. Use the **no** form of this command to exit BGP address configuration mode.

address-family ipv4 [**unicast**]

no address-family ipv4 [**unicast**]

Parameter Description

Parameter	Description
-	Enter IPv4 unicast address family mode by default
unicast	Optional, enter IPv4 unicast address family mode

Defaults The configuration mode is unicast address prefix by default.

Command Mode BGP configuration mode/BGP Scope Configuration Mode

Usage Guide In BGP address configuration mode, use the standard IPv4 address for the configuration.
To return to BGP configuration mode, run the command **exit-address-family**.

Configuration Examples The following example enters the IPv4 address family configuration mode.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family ipv4
```

Related Commands

Command	Description
exit-address-family	Exits the mode.

Platform Description None

5.3 address-family ipv4 vrf

Use this command to enter the IPv4 VRF address family configuration mode to configure BGP and enable the exchange of route information of a VRF. Use the **no** form of this command to restore the default setting.

address-family ipv4 vrf *vrf-name*

no address-family vrf *vrf-name*

Parameter Description

Parameter	Description
vrf-name	VRF name

Defaults No vrf is defined by default.

Command BGP configuration mode

Mode

Usage Guide

You can execute this command to configure or exit the exchange of route information between PEs and CEs.

To return to BGP configuration mode, run the **exit-address-family** command.

Configuration Examples

The following example enters the IPv4 VRF address family configuration mode.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family ipv4 vrf vpn1
```

Related Commands

Command	Description
exit-address-family	Exits the configuration mode.

Platform Description

N/A

5.4 address-family ipv6

Use this command to enter IPv6 address family configuration mode and enable the exchange of IPv6 route information. Use the **no** or **default** form of this command to restore the default setting. Use the **exit-address-family** command to exit BGP address-family configuration mode.

address-family ipv6 [**unicast**]

no address-family ipv6 [**unicast**]

default address-family ipv6 [**unicast**]

Parameter Description

Parameter	Description
-	Enter IPv4 unicast address family mode by default
unicast	Optional, enter IPv4 unicast address family mode

Defaults

The configuration mode is unicast address prefix by default.

Command Mode

BGP configuration mode/ BGP Scope Configuration Mode

Usage Guide

You can use this command not only to enter IPv6 address-family configuration mode of the BGP to configure the IPv6 neighbors, but also activate neighbors in IPv6 address-family configuration mode after configuring IPv6 neighbors in BGP configuration mode.

The **exit-address-family** command is used to return to BGP configuration mode.

Configuration Examples

The following example enters the IPv6 address family configuration mode.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family ipv6
```

Related Commands

Command	Description
exit-address-family	Exits the mode.

Platform Description None

5.5 address-family ipv6 vrf

Use this command to enter BGP configuration mode, enable the IPv6 route information exchange function under a vrf. Use **no** form of this command to restore the default setting. Use the **exit-address-family** command to exit BGP address configuration mode.

address-family ipv6 vrf *vrf-name*

no address-family ipv6 vrf *vrf-name*

Parameter Description

Parameter	Description
vrf-name	VRF name

Defaults No vrf address family is defined by default.

Command Mode BGP configuration mode

Usage Guide You can use this command to start configuring (or quit) the exchange of BGP route information between PE or MCE device and CE.

You can use the exit-address-family command to return to BGP configuration mode.

If ipv4 vrf and ipv6 vrf address family modes of the same vrf are activated at the same time, and same neighbor is activated in two address family modes, the neighbor's global commands will be displayed in both the address family modes at the same time, while its address family commands will only be displayed under respective address family mode.

Configuration Examples The following example enters the IPv6 VRF address family configuration mode.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family ipv6 vrf vpn1
```

Configuration Examples

Command	Description
exit-address-family	Exits the mode.

Platform Description N/A

5.6 address-family l2vpn

Use this command to enter the L2VPN address family configuration mode and enable the exchange of L2VPN route information between BGP neighbors. Use the **no** or **default** form of this command to restore the default settings.

address-family l2vpn { vpls | vpws | evpn}

no address-family l2vpn { vpls | vpws | evpn }

default address-family l2vpn { vpls | vpws | evpn }

Parameter Description

Parameter	Description
vpls	L2VPN VPLS address family.
vpws	L2VPN VPWS address family.
evpn	L2VPN EVPN address family.

Defaults No L2VPN address family is defined by default.

Command Mode BGP configuration mode / BGP scope global configuration mode

Usage Guide Use the **exit-address-family** command to exit the L2VPN address family configuration mode.

Configuration Examples The following example enters the L2VPN VPLS address family configuration mode.

```
Ruijie(config)# router bgp 100
Ruijie(config-router)# address-family l2vpn vpls
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.7 address-family vpnv4

Use this command to enter the VPNv4 address family configuration mode and enable the exchange of VPN route information between PE peers. Use the **no** or **default** form of this command to restore the default settings.

address-family vpnv4 [unicast]

no address-family vpnv4 [unicast]

default address-family vpn4 [unicast]

Parameter Description

Parameter	Description
unicast	Optional, enter VPNv4 unicast address family mode.

Defaults No VPNv4 address family is defined by default.

Command Mode BGP configuration mode, BGP scope global configuration mode

Usage Guide Use the **exit-address-family** command to exit the VPNv4 address family configuration mode.

Configuration Examples The following example enters the VPNv4 address family configuration mode.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family vpnv4
```

Related Commands

Command	Description
exit-address-family	Exits the mode.

Platform Description N/A

5.8 address-family vpnv6

Use this command to enter the VPNv6 address family configuration mode and enable the exchange of VPN route information between PE peers. Use the **no** or **default** form of this command to restore the default settings.

address-family vpnv6 [unicast]

no address-family vpnv6 [unicast]

default address-family vpn4 [unicast]

Parameter Description

Parameter	Description
unicast	Optional, enter VPNv6 unicast address family mode.

Defaults No VPNv6 address family is defined by default.

Command Mode BGP configuration mode, BGP scope global configuration mode.

Usage Guide Use the **exit-address-family** command to exit the VPNv6 address family configuration mode.

Configuration Examples The following example enters the VPNv6 address family configuration mode.

```
Ruijie(config)# router bgp 65000
```

```
Ruijie(config-router)# address-family vpnv6
```

Related Commands	Command	Description
	exit-address-family	Exits the mode.

Platform Description N/A

5.9 adj-rib-in post-policy

Use this command to enable the BMP protocol to monitor the route applied with routing policies and received from the peer end. Use the **no** form of this command to disable the BMP protocol to monitor the route applied with routing policies and received from the peer end. Use the **default** form of this command to restore the default settings.

adj-rib-in post-policy

no adj-rib-in post-policy

default adj-rib-in post-policy

Parameter Description	Parameter	Description
	N/A	N/A

Defaults The route applied with routing policies and received from the peer end is not monitored by default

Command Mode BGP configuration mode

Default Level 14

Configuration Examples

1. Enable the BMP protocol to monitor the route applied with routing policies and received from the peer end.

```
Ruijie(config)#bmp server 1
Ruijie(config-bmpsrvr)#adj-rib-in post-policy
```

Verification Use the **show running-config** command to check BGP configuration

5.10 adj-rib-in pre-policy

Use this command to configure the BMP protocol to monitor the routing information without modification received from the peer end. Use the **no** form of this command to configure the BMP

protocol not to monitor the routing information without modification received from the peer end. Use the **default** form of this command to restore the default settings.

adj-rib-in pre-policy

no adj-rib-in pre-policy

default adj-rib-in pre-policy

Parameter Description

Parameter	Description
N/A	N/A

Defaults The routing information without modification received from the peer end is not monitored by default.

Command Mode BMP configuration mode

Default Level 14

Configuration Examples

1. Enable the BMP protocol to monitor the routing information without modification received from the peer end.

```
Ruijie(config)#bmp server 1
Ruijie(config-bmpsrvr)#adj-rib-in pre-policy
```

Verification Use the **show running-config** command to check BGP configuration

5.11 adj-rib-out post-policy

Use this command to enable the BMP protocol to monitor the route applied with routing policies and sent to the peer end. Use the **no** form of this command to disable the BMP protocol to monitor the route applied with routing policies and sent to the peer end. Use the **default** form of this command to restore the default settings.

adj-rib-out post-policy

no adj-rib-out post-policy

default adj-rib-out post-policy

Parameter Description

Parameter	Description
N/A	N/A

Defaults The route applied with routing policies and sent to the peer end is not monitored by default

Command Mode BMP configuration mode

Default

Level 14

Configuration Examples

Enable the BMP protocol to monitor the route applied with routing policies and sent to the peer end.

```
Ruijie(config)#bmp server 1
Ruijie(config-bmpsrvr)#adj-rib-in post-policy
```

Verification Use the **show running-config** command to check BGP configuration

5.12 advertise ipv4 unicast

Use this command to configure IPv4 VRF re-distribution. Use the **no** form of this command to disable the IPv4 VRF re-distribution. Use the **default** form of this command to restore the default settings.

advertise ipv4 unicast

no advertise ipv4 unicast

default advertise ipv4 unicast

Parameter Description

Parameter	Description
N/A	N/A

Defaults The IPv4 VRF re-distribution function is disabled by default.

Command Mode BGP L2VPN EVPN address family mode.

Usage Guide

Limitations on re-distribution of IPv4 unicast routes into BGP:

1. The re-distribution of IPv4 unicast routes into BGP function can only take effect in BGP L2VPN EVPN address family mode.
2. Only after the VXLAN module has advertised the L3 virtual MAC address, the IPv4 unicast routes can be re-distributed.
3. Only after the route-target import attribute of EVI instance matches the route-target attribute of VRF, the IPv4 unicast routes can be re-distributed.
4. The non-VRF IPv4 unicast routes cannot be re-distributed.

Configuration Examples

The following example configures the re-distribution of IPv4 unicast routes into BGP.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family l2vpn evpn
Ruijie(config-router-af)# advertise ipv4 unicast
```

Related

Command	Description

Commands	N/A	N/A

Platform Description N/A

5.13 advertise ipv6 unicast

Use this command to configure IPv4 VRF re-distribution. Use the **no** form of this command to disable the IPv4 VRF re-distribution. Use the **default** form of this command to restore the default settings.

advertise ipv6 unicast

no advertise ipv6 unicast

default advertise ipv6 unicast

Parameter Description

Parameter	Description
N/A	N/A

Defaults The IPv6 VRF re-distribution function is disabled by default.

Command Mode BGP L2VPN EVPN address family mode.

Usage Guide

Limitations on re-distribution of IPv6 unicast routes into BGP:

1. The re-distribution of IPv6 unicast routes into BGP function can only take effect in BGP L2VPN EVPN address family mode.
2. Only after the VXLAN module has advertised the L3 virtual MAC address, the IPv4 unicast routes can be re-distributed.
3. Only after the route-target import attribute of EVI instance matches the route-target attribute of VRF, the IPv6 unicast routes can be re-distributed.
4. The non-VRF IPv6 unicast routes cannot be re-distributed.

Configuration Examples

The following example configures the re-distribution of IPv6 unicast routes into BGP.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family l2vpn evpn
Ruijie(config-router-af)# advertise ipv6 unicast
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.14 aggregate-address

Use this command to set the aggregate route of BGP. Use the **no** form of this command to delete the aggregate route. Use the **default** form of this command to restore the default settings.

aggregate-address { *ip-address mask* | *prefix* } [**as-set**] [**summary-only**] [**suppress-map** *map-tag1*] [**advertise-map** *map-tag2*] [**attribute-map** *map-tag3*]

no aggregate-address { *ip-address mask* | *prefix* }

default aggregate-address { *ip-address mask* | *prefix* | }

Parameter Description

Parameter	Description
ip address	Aggregate IPv4 address
mask	Mask of the aggregate IPv4 address
prefix	Aggregate address prefix
as-set	Keeps the AS path information of the path in the aggregate address range.
summary-only	Advertises only the aggregate route.
suppress-map *map-tag1*	Configures the routing policy to suppress the specified route. Up to 32 characters are allowed for the route map.
advertise-map *map-tag2*	Configures the routing policy to generate the aggregate route. Up to 32 characters are allowed for the route map
attribute-map *map-tag3*	Configures the routing policy to control the attribute of aggregate route. Up to 32 characters are allowed for the route map.

Defaults The address aggregation is not configured by default.

Command Mode BGP configuration mode, BGP scope configuration mode, IPv4 address family configuration mode, IPv6 unicast family mode, IPv4 VRF address family configuration mode and IPv6 VRF address family configuration mode

Usage Guide The BGP-enabled device will advertise all path information both before and after aggregation by default. Use the **aggregate-address summary-only** command to advertise the aggregate route only.

Configuration Examples The following example sets the aggregate IPv4 route.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# aggregate-address 10.0.0.0
255.0.0.0 as-set
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.

Platform None

Description

5.15 bfd bind bgp

Use this command to manually configure the BFD session for the BGP protocol. Use the **no** or **default** form of the command to restore the default settings.

bfd bind bgp peer-ip *ip-address* [**vrf** *vrf-name*] **interface** *interface-type interface-index* **source-ip** *ip-address*

no bfd bind bgp peer-ip *ip-address* [**vrf** *vrf-name*] **interface** *interface-type interface-index* **source-ip** *ip-address*

default bfd bind bgp peer-ip *ip-address* [**vrf** *vrf-name*] **interface** *interface-type interface-index* **source-ip** *ip-address*

Parameter Description

Parameter	Description
peer-ip *ip-address*	Peer IP address.
vrf *vrf-name*	The VRF instance where the BFD session is. The default is global VRF.
interface *interface-type interface-index*	Outbound interface type and its index.
source-ip *ip-address*	Local IP address.

Defaults No static BFD session is configured for BGP by default.

Command Mode Global configuration mode

Usage Guide To perform Fast-Reroute, a BFD session should be created between local device and the next-hop device to perform fast link failure detection. In general, BGP-based BFD session can realize the function. When the next-hop device is not the neighbor device, the BFD session should be configured manually.

Configuration Examples The following example configures a static BFD session for BGP.

```
Ruijie(config)# bfd bind bgp peer-ip 10.0.0.1 interface GigabitEthernet 0/1
source-ip 10.0.0.2
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.16 bgp additional-paths select

Use this command to enable the add-path route. Use the **no** or **default** form of this command to restore the default configurations.

bgp additional-paths select { **all** | **best** *number* | **ecmp** }

no bgp additional-paths select

default bgp additional-paths select

Parameter Description

Parameter	Description
all	Select all valid routes as the add-path routes in the type of “all”.
best *number*	Select the next-best routes as the add-path routes in the type of “best number”. Range of *number*: 2-3.
ecmp	Select the ecmp routes as the add-path routes in the type of “ecmp”. Additional configuration is needed to select the ecmp routes.

Defaults The add-path route is not enabled by default.

Command Mode BGP configuration mode, BGP IPv4/IPv6 unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode or BGP scope global configuration mode

Default Level 14

Usage Guide Run the following commands to advertise the add-path routes:

1. **neighbor** { *peer-address* | *peer-group-name* } **advertise additional-paths { all** | **best** *number* | **ecmp** }
2. **neighbor** { *peer-address* | *peer-group-name* } **additional-paths** { **send** [**receive**] | **receive** }

Configuration Examples The following example selects the ecmp routes as the add-path route in the type of “ecmp”.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# maximum-paths ibgp 8
Ruijie(config-router)# bgp bestpath as-path multipath-relax
Ruijie(config-router)# bgp additional-paths select ecmp
```

The following example selects the next-best routes as the add-path route in the type of “best number”.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp additional-paths select best 2
```

5.17 bgp advertise lowest-priority on-startup

Use this command to adjust the priority of released routes to the lowest upon BGP restart.
bgp advertise lowest-priority on-startup [*recover-time*]

Use the **no** form of this command to advertise routes of normal priorities upon BGP restart.
no bgp advertise lowest-priority on-startup

Use the **default** form of this command to restore the default configurations.
default bgp advertise lowest-priority on-startup

Parameter Description

Parameter	Description
recover-time	Duration of the timer used to restore the priority of released routes in seconds. The value ranges from 1 to 65,536. The default value is 600.

Defaults The BGP does not change the priority of released routes by default.

Command Mode BGP configuration mode or BGP scope global configuration mode

Default Level 14

Usage Guide You can run the **clear bgp advertise lowest-priority on-peerup** command to manually restore the priority of released routes to that before adjustment.

Configuration Examples The following example adjusts the priority of released routes to the lowest upon BGP restart.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp advertise lowest-priority on-startup
```

5.18 bgp advertise non-transitive extcommunity

Use this command to allow carried non-transitive extcommunty when BGP is notifying EBGP neighbors of a route. Use the **no** or **default** form of this command to restore the default settings.
bgp advertise non-transitive extcommunity
no bgp advertise non-transitive extcommunity
default bgp advertise non-transitive extcommunity

Parameter Description

Parameter	Description
N/A	N/A

Defaults Non-transitive extcommunty is removed when notifying EBGP neighbors of a route.

Command Mode BGP configuration mode/ BGP scope global configuration mode

Usage Guide By default, when notifying EBGP neighbors of a route, neighbors will not be notified of extcommunty with the "non-transitive" flag. This configuration can enable the notification of non-transitive extcommunty.

Non-transitive extcommunty will be carried when notifying alliance EBGP or IBGP neighbors of a route.

Configuration Examples The following example allows carried non-transitive extcommunty.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp advertise non-transitive extcommunity
```

Configuration Examples

Command	Description
router bgp	Enables BGP protocol.

Platform Description N/A

5.19 bgp advertise-map

Use this command to advertise the route policy to all neighbors. Use the **no** form of this command to clear the demand. Use the **default** form of this command to restore the default settings.

bgp advertise-map *map-tag*

no bgp advertise-map

default bgp advertise-map

Parameter Description

Parameter	Description
map-tag	Indicates name of the policy.

Defaults By default, it is disabled.

Command Mode BGP configuration mode, BGP IPv4 Unicast/VRF address family configuration mode, BGP VPNv4 address family configuration mode, BGP L2VPN VPWS/VPLS/EVPN address family configuration mode or BGP scope configuration mode

Usage Guide Command **bgp advertise-map** takes a higher priority over command **neighbor route-map out**.

Configuration The following example advertises the route policy to all neighbors..

Examples

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp advertise-map MAP
```

Related Commands

Command	Description
N/A	N/A

Platform Description None

5.20 bgp always-compare-med

Use this command to compare Multi Exit Discriminator (MED) all the time. Use the **no** form of this command to restore the default setting.

bgp always-compare-med

no bgp always-compare-med

Parameter Description

Parameter	Description
N/A	N/A

Defaults MED of peer paths from the same AS is compared by default.

Command Mode BGP configuration mode/BGP scope global configuration mode

Usage Guide

The MED value is compared for paths of peers from the same AS by default. This command can be used to allow comparing MED values for paths from different ASs. If there are multiple valid paths to the same destination, the one with lower MED value has higher priority.
This command is not recommended unless you are sure that different ASs are using the same IGP and routing method.

Configuration Examples

The following example compares Multi Exit Discriminator (MED) all the time.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp always-compare-med
```

Related Commands

Command	Description
show ip bgp	Displays the BGP route entry.
bgp bestpath med confed	Compares the MED value of paths of peers from different ASs when selecting the optimal path.
bgp bestpath med missing-as-worst	Sets the priority of the path without MED attribute as the lowest when selecting the optimal path.
bgp deterministic-med	Compares paths of peers from the same AS when selecting the optimal path.

Platform None

Description

5.21 bgp asnotation dot

Use this command to modify the displaying mode of the 4-byte AS notation and the matching type of the regular expression as the dot mode (that is, two dotted decimal numbers). Use the **no** form of this command to restore the default setting.

bgp asnotation dot

no bgp asnotation dot

Parameter Description

Parameter	Description
N/A	N/A

Defaults

The 4-byte AS notation is shown in decimal digit, and the regular expression also matches the 4-byte AS notation with decimal digit by default.

Command Mode

BGP configuration mode/BGP scope global configuration mode

Usage Guide

Our devices support two modes of representing the 4-byte AS notation. One is decimal digit, and the other one is dot mode which represents the 65536 with 1.0. The decimal format is same as the default format, which represents the 4-byte AS notation with decimal digits. The dot mode displays the 4-byte AS notation in the format of ([two high bytes.] two low bytes). If the [two high bytes.] is zero, it will not be displayed. That is, the AS notation represented as 65536 in decimal is 1.0 in the dot mode. In another example, the AS notation is 65534 represented in decimal, while it is represented as 65534 in the dot mode without the zero in front.

No matter which mode will be adopted to display the 4-byte AS notation, both modes can be used when entering the configuration commands. But the representation and displaying mode of the 4-byte AS notation in the regular expression must be the same. Otherwise, the matching will fail.

After executing the **bgp asnotation** command, you must use the clear ip bgp * to perform the resetting, so as to re-match the filtering condition of the regular expression.

The AS notation is represented as 1 to 65535 no matter using decimal or dot mode.

Configuration Examples

The following example modifies the showing mode of the 4-byte AS notation.

```
Ruijie(config)# router bgp 1.0
Ruijie(config-router)# bgp asnotation dot
```

Related Commands

Command	Description
show ip bgp summary	Displays the related information of BGP neighbor.

Platform Description

None

5.22 bgp bestpath as-path ignore

Use this command to disregard the length of the AS path. Use the **no** form of this command to restore the default setting.

bgp bestpath as-path ignore

no bgp bestpath as-path ignore

Parameter Description

Parameter	Description
N/A	N/A

Defaults The router with shorter AS path length is chosen by default.

Command Mode BGP configuration mode/BGP scope global configuration mode

Usage Guide

Configuration Examples The following example disregard the length of the AS path.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp bestpath as-path ignore
```

Related Commands

Command	Description
show ip bgp	Displays the BGP route entry.

Platform Description None

5.23 bgp bestpath as-path multipath-relax

Use this command to enable AS path multipath-relax (only comparing the AS path length) for BGP multipathing load. Use the **no** form of this command to restore the default setting.

bgp bestpath as-path multipath-relax

no bgp bestpath as-path multipath-relax

Parameter Description

Parameter	Description
N/A	N/A

Command Mode BGP requires that AS path attributes must be the same when calculating equal-cost multipath (ECMP) by default.

Defaults BGP configuration mode/BGP scope global configuration mode

Usage Guide BGP compares AS path attributes in a precise way when selecting the optimal path as ECMP by default. Only paths with same AS path attributes can constitute equal-cost paths. As a result, BGP multipathing load balancing cannot be implemented in an application scenario. After AS path multipath-relax is enabled, only the AS path length is compared, allowing the implementation of BGP multipathing load balancing.

Configuration Examples The following example enables AS path multipath-relax for BGP multipathing load.

```
Ruijie(config)# router bgp 65530
Ruijie(config-router)# bgp bestpath as-path multipath-relax
```

Related Commands

Command	Description
router bgp	Enables BGP.
show ip bgp	Displays BGP routing entries.

Platform Description None

5.24 bgp bestpath compare-confed-aspath

Use this command to compare the AS path length of the confederation from the same external routes when selecting the optimal path, with smaller AS path in the confederation for higher path priority. Use the **no** form of this command to restore the default setting.

bgp bestpath compare-confed-aspath

no bgp bestpath compare-confed-aspath

Parameter Description

Parameter	Description
N/A	N/A

Defaults The AS path of the EBGP peer routes inside the same confederation is not compared by default when selecting the optimal path. Instead, the routing method is implemented.

Command Mode BGP configuration mode/BGP scope global configuration mode

Usage Guide During the selection of the same routing information from the peer of the internal EBGP By default, the AS path of the confederation is not compared. This command is used to compare the AS path of the confederation.
Note that if a route contain no AS path of the confederation, it is impossible to implement the AS path comparison for that route.

Configuration Examples The following example compares the AS path length of the confederation.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp bestpath compare-confed-aspath
```

Related Commands

Command	Description
show ip bgp	Displays the BGP route entry.
bgp router-id	Sets the BGP Device ID.

Platform Description None

5.25 bgp bestpath compare-routerid

Use this command to compare the router ID of the same external routes when selecting the optimal path, with smaller router ID for higher path priority. Use the **no** form of this command to restore the default setting.

bgp bestpath compare-routerid

no bgp bestpath compare-routerid

Parameter Description

Parameter	Description
N/A	N/A

Defaults If two paths received from different EBGP peers have the same path, the first one is considered with higher priority by default.

Command Mode BGP configuration mode/BGP scope global configuration mode

Usage Guide If two paths with identical path attributes are received from different EBGP peers during the selection of the optimal path, we will select the optimal path according to the sequence of receiving the paths by default. You can select the path with smaller Device ID as the optimal path by configuring the following commands.

Configuration Examples The following example compares the router ID of the same external routes.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp bestpath compare-routerid
```

Related Commands

Command	Description
show ip bgp	Displays the BGP route entry.
bgp router-id	Sets the BGP Device ID.

Platform Description None

5.26 bgp bestpath igp-metric ignore

Use this command to disregard the IGP Metric value of the next-hop when choosing the optimal path.

Use the **no** form of this command to compare IGP Metric value of the next-hop when choosing the optimal path. The smaller the Metric value is, the higher the priority it is.

Use the **default** form of this command to restore the default settings.

bgp bestpath igp-metric ignore

no bgp bestpath igp-metric ignore

default bgp bestpath igp-metric ignore

Parameter Description

Parameter	Description
N/A	N/A

Defaults

The route whose next-hop address has the smallest IGP Metric value is chosen for the optimal path.

Command Mode

BGP configuration mode / Scope global configuration mode

Default Level

14

Configuration Examples

The following example ignores the IGP Metric value of the next-hop when calculating the BGP routing.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp bestpath as-path ignore
```

Verification

Use the **show running-config** command to check the BGP configuration.

5.27 bgp bestpath med confed

Use this command to compare the MED value of the path of the internal peer from AS confederation during selecting the optimal path. Use the **no** form of this command to restore the default setting.

bgp bestpath med confed [missing-as-worst]

no bgp bestpath med confed [missing-as-worst]

Parameter Description

Parameter	Description
missing-as-worst	Sets the priority of the path without MED attribute as the lowest.

Defaults

The MED value of the path of the peer inside the AS confederation is not compared by default when selecting the optimal path.

Command Mode BGP configuration mode/BGP scope global configuration mode

Usage Guide The MED attribute of the path is transferred between the ASs inside the confederation. You may set always comparing this value.

Configuration Examples The following example compares the MED value of the path of the internal peer.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp bestpath med confed
```

Related Commands

Command	Description
show ip bgp	Displays the BGP route entry.
bgp always-compare-med	Compares the MED value of paths of peers from different ASs when selecting the optimal path.
bgp bestpath med missing-as-worst	Sets the priority of the path without MED attribute as the lowest when selecting the optimal path.
bgp deterministic-med	Compares paths of peers from the same AS when selecting the optimal path.

Platform Description None

5.28 bgp bestpath med missing-as-worst

Use this command to set the priority of the path without MED attribute as the lowest when selecting the optimal path. Use the **no** form of this command to restore the default setting.

bgp bestpath med missing-as-worst

no bgp bestpath med missing-as-worst

Parameter Description

Parameter	Description
N/A	N/A

Defaults If a path without MED attribute is received, the MED value of the path is 0 by default. Such route has the highest priority according to the above-mentioned rule.

Command Mode BGP configuration mode/BGP scope global configuration mode

Usage Guide The MED value of a path without MED attribute will be 0 by default. For the smaller the MED value, the higher the priority of the path is, the MED value of this path has the highest priority. This command can be used to figure the path without MED attribute has the lowest priority.

Configuration The following example sets the priority of the path without MED attribute as the lowest.

Examples

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp bestpath medmissing-as-worst
```

Related Commands

Command	Description
show ip bgp	Displays the BGP route entry.
bgp always-compare-med	Compares the MED value of paths of peers from different ASs when selecting the optimal path.
bgp bestpath med confed	Sets the priority of the path without MED attribute as the lowest when selecting the optimal path.
bgp deterministic-med	Compares paths of peers from the same AS when selecting the optimal path.

Platform Description None

5.29 bgp bestpath multipath-compare-routerid

Use this command to enable the router ID comparison among multiple BGP paths. Load balancing can be implemented only when multiple paths (same router ID) are from the same device. Use the **no** form of this command to disable the router ID comparison among multiple BGP paths. Use the **default** form of this command to restore the default settings.

bgp bestpath multipath-compare-routerid

no bgp bestpath multipath-compare-routerid

default bgp bestpath multipath-compare-routerid

Parameter Description

Parameter	Description
N/A	N/A

Defaults The router ID comparison among multiple BGP paths is disabled by default.

Command Mode BGP configuration mode/BGP scope global configuration mode

Default Level 14

Usage Guide N/A

Configuration Example The following example enables the router ID comparison among multiple BGP paths.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp bestpath multipath-compare-routerid
```

Verification Run the **show running-config** command to display the BGP configuration.

5.30 bgp bmp-active

Use this command to monitor all BGP neighbors by all BMP servers. Use the **default** form of this command to restore the default settings.

bgp bmp-active

no bgp bmp-active

default bgp bmp-active

Parameter Description

Parameter	Description
N/A	N/A

Defaults The function is disabled by default.

Command Mode BGP configuration mode

Default Level 14

Usage Guide N/A

Configuration Example The following example monitors all BGP neighbors by all BMP servers.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp bmp-active
```

Verification Run the **show running-config** command to display the BGP configuration.

5.31 bgp client-to-client reflection

Use this command to enable the route reflection function between clients on the device. Use the **no** form of this command disables the route reflection function between clients.

bgp client-to-client reflection

no bgp client-to-client reflection

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled without the client for route reflection by default.

Command Mode BGP configuration mode/BGP scope global configuration mode

Usage In general, it is unnecessary to establish the connection relationship between the clients of the

Guide route reflector within the cluster, and the route reflector will reflect the route among clients. However, if the full connection relationship is established for all clients, the function for the route reflector to reflect the client route can be disabled.
To disable the route reflection function, use the command **no bgp client-to-client reflection**.

Configuration Examples

The following example shows how to enable the route reflection function between clients on the device.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# no bgp client-to-client
reflection
```

Related Commands

Command	Description
bgp cluster-id	Configures the cluster ID of the route reflector.
neighbor route-reflector-client	Configures the client of the route reflector and configure itself as the route reflector.

Platform Description None

5.32 bgp cluster-id

Use this command to configure the cluster ID of the route reflector. Use the **no** form of this command to restore it to the default setting.

bgp cluster-id *cluster-id*

no bgp cluster-id

Parameter Description

Parameter	Description
cluster-id	Cluster ID of the route reflector, an IP address of up to four bytes or an integer (must be entered in form of IP address)

Defaults The cluster id is the router-id of the route reflector by default.

Command Mode BGP configuration mode/BGP scope global configuration mode

Usage Guide In general, one group is only configured with one route reflector. In this case, the Device ID of the route reflector can be used to identify this cluster. To increase the redundancy, you can set more than one route reflector within this cluster. In this case, you must configure the cluster ID, so that one route reflector can identify the route update from other route reflectors of this cluster.

Configuration Examples

The following example configures the cluster ID of the route reflector.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp cluster-id 10.0.0.1
```

Related Commands

Command	Description
bgp client-to-client reflection	Configures the route reflection between clients.
neighbor route-reflector-client	Configures the client of the route reflector and configures itself as the route reflector.

Platform Description None

5.33 bgp confederation identifier

Use this command to configure the AS confederation identifier. Use the **no** form of this command to restore the default setting.

bgp confederation identifier *as-number*

no bgp confederation identifier

Parameter Description

Parameter	Description
as-number	AS confederation identifier in the range from 1 to 65535 In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, which is represented as 1 to 65535.65535 in dot mode.

Defaults There is no confederation identifier by default

Command Mode BGP configuration mode/BGP scope global configuration mode

Usage Guide

The confederation is a measure to reduce the connections of IBGP peers within the AS.
One AS is divided into several sub ASs and one unified confederation ID (namely, confederation AS number) is set to constitute these sub ASs into a confederation. For the external confederation, the whole confederation is still considered as one AS, and only the confederation AS number is visible for the external network. Within the confederation, the full IBGP peer connection is still established among the BGP Speakers within the sub AS, and the EBGP connection is established among the BGP Speakers within the sub AS. Despite of the EBGP connections established between the BGP speakers in an AS, the next-hop, MED and local priority information remains unchanged in exchanging the information.

Configuration Examples The following example configures the AS confederation identifier.

```
Ruijie(config-router)# bgp confederation identifier 65000
```

Related Commands

Command	Description
bgp confederation peers	Adds member AS of the AS confederation.

Platform Description None

5.34 bgp confederation peers

Use this command to configure member ASs of the AS confederation. Use the **no** form of this command to restore the default setting.

bgp confederation peers *as-number* [*…as-number*]

no bgp confederation peers *as-number* [*…as-number*]

Parameter Description

Parameter	Description
as-number	Member ASs in the confederation range from 1 to 65535. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.

Defaults There is no confederation member by default.

Command Mode BGP configuration mode/BGP scope global configuration mode

Usage Guide

The confederation is a measure to reduce the connections of BGP peers within the AS.
One AS is divided into several sub ASs and one unified confederation ID (namely, confederation AS number) is set to constitute these sub ASs into a confederation. The whole external confederation is still considered as one AS, and only the confederation AS number is visible for the external network. Within the confederation, the full IBGP peer connection is still established among the BGP Speakers within the sub AS, and the EBGP connection is established among the BGP Speakers within the sub AS. Despite of the EBGP connections established between the BGP speakers in an AS, the next-hop, MED and local priority information remains unchanged in exchanging the information.
This command is used to specify the member AS of a confederation.

- This command can configure up to 25 members of a confederation at one time. For more members, enter them for several times.
- Run the [**default** | **no**] **bgp confederation peers** command without AS number will delete all AS member configuration.

Configuration Examples The following example configures member ASs of the AS confederation.

```
Ruijie(config-router)# bgp confederation peers 65000 65100
```

Related Commands

Command	Description
bgp confederation identifier	Configures the confederation identifier.

Platform Description None

5.35 bgp dampening

Use this command to enable the routing attenuation and set the attenuation parameters in the address-family or routing configuration mode. Use the **no** form of this command to restore the default setting.

bgp dampening [*half-life* [*reusing suppressing* max-supress-time] **| route-map** *name*] [**withdrawal-ignore**]

Parameter Description

Parameter	Description
half-life	Half-life period, ranging from 1 to 45 minutes
reusing	When the penalty value reaches this value, the routing suppression is cancelled. The value ranges from 1 to 10000.
suppressing	When the penalty value reaches this value, routing is suspended. The value ranges from 1 to 20000.
max-supress-time	Maximum time for routing suppression, ranging from 1 to 255 minutes
withdrawal-ignore	The penalty value is not added when the routing suppression is cancelled.
name	Route-map name, apply the routing attenuation to the specified route through the route-map.

Defaults This function is disabled by default.

Command Mode BGP configuration mode, BGP IPv4 unicast address-family configuration mode, BGP IPv4 VRF address-family configuration mode, BGP IPv6 unicast address-family configuration mode, BGP IPv6 VRF address-family configuration mode, BGP L2VPN VPLS/VPWS/EVPN address-family configuration mode, or BGP scope configuration mode.

Usage Guide

The **bgp dampening** command is used to suppress unstable BGP routing. The BGP uses the penalty value to describe routing suppression intensity. The penalty value increases 1000 when the routing oscillation is performed once. The suppressed routes will not be used during the BGP routing election.

The **bgp dampening** command is used to suppress unstable EBGP routes and does not take effect to IBGP routes.

The BGP uses the penalty value to describe the route stability. A larger penalty value indicates a more unstable route. The penalty value increases by 1000 when route oscillation occurs (upon receiving withdraw packets).The penalty value does not increase when the upper limit is reached. The upper limit is determined based on the configured max-supress-time value and calculated using the following formula: Penalty upper limit = 2 ^ (max-supress-time/Half-life) x Reusing. In addition, the penalty upper limit cannot be greater than 20000. Therefore, the max-supress-time, half-life, and reusing values need to be adjusted based on the network conditions. The relationship

among these parameters are as follows:
Half-life ≤ max-supress-time
Reusing ≤ Suppressing ≤ Penalty upper limit
You can also specify only the half-life value. In this case, the max-supress-time value is (half-life x 4), the reusing value is 750, and the suppressing value is 2000.
EBGP routes whose penalty value exceeds the suppressing value will be suppressed. Suppressed routes will not be used during BGP route election and will not be advertised to other BGP peers. If route oscillation occurs in suppressed routes, the penalty value will continue to increase until the penalty upper limit is reached.
The penalty value of suppressed routes will decrease by a half each time the half-life time passes. When the penalty value decreases to the reusing value, routes whose attribute is update in the last update will participate in BGP route election again. When the penalty value decreases to 0, routes whose attribute is withdraw in the last update will be deleted from the BGP route table.
By default, 1000 penalty values are added for route cancellation and 500 penalty values are added for route update.
Use the **withdrawal-ignore** command to not add penalty values for route cancellation.

Configuration Examples The following example enables the routing attenuation and set the attenuation parameters.

```
Ruijie(config-router)# bgp dampening 30 1500 10000 120
```

Related Commands

Command	Description
clear ip bgp dampening	Clears the BGP suppression and cancels the suppression for the routes.
show ip bgp dampening dampened-paths	Displays the suppressed route information.

Platform Description None

5.36 bgp default ipv4-unicast

Use this command to set the IPv4 unicast address as the default address family. Use the **no** form of this command to restore the default setting.

bgp default ipv4-unicast

no bgp default ipv4-unicast

Parameter Description

Parameter	Description
N/A	N/A

Defaults The IPv4 unicast address is the default address family.

Command Mode BGP configuration mode/BGP scope global configuration mode

Usage This command is used to set the default address family of BGP as the IPv4 unicast address.

Guide

Configuration Examples The following example sets the IPv4 unicast address as the default address family.

```
Ruijie(config-router)# default ipv4-unicast
```

Related Commands

Command	Description
address-family ipv4	Enters the IPv4 address mode.

Platform Description None

5.37 bgp default local-preference

Use this command to set the default local-preference attribute value. Use the **no** form of this command to restore the default setting.

bgp default local-preference *value*

no bgp default local-preference

Parameter Description

Parameter	Description
value	Local priority attribute, in the range from 0 to 4294967295

Defaults The local preference value is 100 by default.

Command Mode BGP configuration mode/BGP scope configuration mode

Usage Guide The BGP takes the local preference as the foundation to compare with the priority of the path learned from IBGP peers. The larger the local preference value, the higher the priority of the path is. The BGP speaker sends the external route received to the IBGP peers to add the local priority value.

Configuration Examples The following example sets the default local-preference attribute value.

```
Ruijie(config-router)# bgp default local-preference 200
```

Related Commands

Command	Description
show ip bgp	Displays the BGP route entry.
bgp always-compare-med	Allows comparing the MED value of the path of the peer from different ASs when electing the optimal path.
bgp bestpath med confed	Allows comparing the MED value of paths of internal peers from AS community when electing the optimal path.
bgp bestpath med missing-as-worst	Allows setting the priority of the path without MED attribute as the lowest when electing the optimal path.

Platform None

Description

5.38 bgp default route-target filter

Use this command to enable the route-target filtering. For the VPNV4 routes, filter the community attributes of the route-target by default. Use the **no** form of this command to disable this function.

bgp default route-target filter

no bgp default route-target filter

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode BGP configuration mode, VPNv4 address-family configuration mode, or BGP L2VPN VPLS/VPWS/EVPN address-family configuration mode or BGP scope configuration mode.

Usage Guide After receiving the VPNV4 route, use the community attributes list of the route-target to filter and distribute different VRFs. With the no form of this command used, the BGP will receive all VPNV4 routes no matter whether these filtered VPNV4 routes will be received by route-target of local VRF. With the PE route-reflector-client configured for the BGP, the VPNV4 route will not be processed through the route-target filtering. In this case, whether the BGP is enabled, the actions are the same without the route-target filtering.

Configuration Examples The following example enables the route-target filtering.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# no bgp default route-target filter
```

Related Commands

Command	Description
neighbor route-reflector-client	Configures the route-reflector-client, and sets itself as the route reflector.

Platform Description N/A

5.39 bgp deterministic-med

Use this command to set comparing preferentially the MED values of peer paths from the same AS. By default, the comparison is based on the received order, and the one received the last is compared first. Use the **no** form of this command to restore the default setting.

bgp deterministic med

no bgp deterministic med

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode BGP configuration mode/BGP scope global configuration mode.

Usage Guide They will be compared with each other according to the sequence the paths are received when the optimal path is selected by default. Execute the following operations in the BGP configuration mode to compare paths of peers from the same AS firstly:

Configuration Examples The following example sets the comparing preferentially MED values.

```
Ruijie(config-router)# bgp deterministic med
```

Related Commands

Command	Description
show ip bgp	Displays the BGP route entry.
bgp always-compare-med	Compares the MED value of paths of peers from different ASs when selecting the optimal path.
bgp bestpath med confed	Sets the priority of the path without MED attribute as the lowest when selecting the optimal path.
bgp bestpath med missing-as-worst	Compares paths of peers from the same AS when selecting the optimal path.

Platform Description None

5.40 bgp enforce-first-as

Use this command to reject the UPDATE messages whose first AS_PATH path section is not the neighbor-configured AS number. Use the **no** form of this command to disable this function.

bgp enforce-first-as

no bgp enforce-first-as

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode BGP configuration mode/BGP scope global configuration mode

Usage Guide The AS number of the device is put into the path section by default to update the update message.

Configuration Examples The following example rejects the UPDATE messages whose first AS_PATH path section is not the neighbor-configured AS number.

```
Ruijie(config-router)# bgp enforce-first-as
```

Related Commands

Command	Description
show ip bgp	Displays the BGP route entry.

Platform Description None

5.41 bgp fast-external-fallover

When the network interface used in establishing the connection of the directly-connected EBGP peer fails, use this command to establish the BGP session connection quickly. Use the **no** form of this command to disable this function.

bgp fast-external-fallover

no bgp fast-external-fallover

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode BGP configuration mode/BGP scope global configuration mode

Usage Guide This command takes effect only for the directly-connected EBGP neighbor.

Configuration Examples The following example creates the fast BGP session.

```
Ruijie(config-router)# bgp fast-external-fallover
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.

Platform Description None

5.42 bgp fast-reroute

Use this command to enable BGP Fast Reroute. Use the **no** or **default** form of this command to restore the default settings.

bgp fast-reroute

no bgp fast-reroute

default bgp fast-reroute

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode BGP configuration mode/ BGP IPv4 unicast address family configuration mode/ BGP IPv6 unicast address family configuration mode/ BGP IPv4 VRF address family configuration mode/ BGP IPv6 VRF address family configuration mode/ BGP scope global configuration mode

Usage Guide

- Only one backup route will be generated and the next-hop of this backup route cannot be the same as that of the preferred route.
- When ECMP is enabled, the FRR cannot generate backup route.
- When this function is enabled, the priority of BGP FRR is lower than that of VPN FRR. So when the VPN FRR is enabled in IPv4 VRF configuration mode, BGP FRR does not take effect unless VPN FRR is unable to calculate the backup route.
- This command can not be run with **bgp install standby-path.**

Configuration Examples

The following example enables BGP Fast Reroute.

```
Ruijie(config)# router bgp 65530
Ruijie(config-router)# bgp faster-reroute
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.43 bgp fast-withdraw

Use this command to configure fast withdrawal of specified BGP route. Use the **no** or **default** form of this command to restore the default settings.

bgp fast-withdraw { **access-list** { *access-list-number* | *access-list-name* } | **prefix-list** *prefix-list-name* | **route-map** *map-tag* }

no bgp fast-withdraw { **access-list | prefix-list | route-map** }

default bgp bgp fast-withdraw { **access-list | prefix-list | route-map** }

Parameter Description

Parameter	Description
access-list-number	Indicates the ACL number. The value ranges from **1** to **199** and **1300** to **2699**.
access-list-name	Indicates an ACL name.
prefix-list-name	Indicates the name of a prefix list.
map-tag	Indicates the name of a route map.

Defaults

This function is disabled by default.

Command Mode

BGP configuration mode/ BGP IPv4 or IPv6 unicast address family configuration mode/ BGP IPv4 or IPv6 VRF address family configuration mode/ BGP VPNv4 address family configuration mode/ BGP L2VPN VPWS/VPLS/EVPN address family configuration mode/ BGP scope global configuration mode.

Usage Guide

- The BGP L2VPN address family configuration mode only supports **route-map** command.
- Command **prefix-list** and **access-list** cannot take effect at the same time.

Configuration Examples

The following example enables fast withdrawal of specified BGP route.

```
Ruijie(config)# router bgp 65530
Ruijie(config-router)# bgp fast-withdraw route-map bgp-filter
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

5.44 bgp graceful-restart

Use this command to enable the global BGP graceful restart function. Use the **no** form of this command to disable BGP graceful restart.

bgp graceful-restart

no bgp graceful-restart

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, BGP graceful restart is enabled so as to help neighbors to perform graceful restart.

Command Mode BGP configuration mode/BGP scope global configuration mode

Usage Guide

The ability of the BGP is advertised and negotiated through the ability field of the Open message. The ability is negotiated during initially setting up the connection. So both sides must reach the consistency of the ability. If it is not supported by any side, this router device will perform the GR incorrectly.

With the GR function enabled, the connected Open message will carry the GR ability field to perform the negotiation of the GR ability. To implement the GR correctly, the GR function must be enabled on both sides of the neighbors.

This command does not take effect immediately on all BGP connections that are set up successfully. To negotiate the GR ability immediately, you need to restart the BGP connection to make the local device negotiate the GR ability with the Peer again by using the clear ip bgp command.

The BGP graceful-restart is used to forward data continuously of the whole network, it requires the device to keep the BGP routing entry valid and forward data continuously when restarting the BGP protocol. Supporting the continuous forwarding during the restarting is related to the hardware ability.

Configuration Examples

The following example enables the graceful restart function of the global BGP.

```
Ruijie(config)# router bgp 500
Ruijie(config-router)# bgp graceful-restart
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
bgp graceful-restart restart-time	Configures the restart time of the BGP graceful-restart.

Platform Description N/A

5.45 bgp graceful-restart disable

Use this command to disable GR capability of a BGP address family. Use the **no** form of this command to restore the default setting.

bgp graceful-restart disable

no bgp graceful-restart disable

Parameter Description

Parameter	Description

N/A	N/A

Defaults The function is disabled by default.

Command Mode BGP configuration mode, IPv4 unicast address family mode, VPNv4 address family mode, L2VPN VPWS/VPLS/EVPN address family mode and scope configuration mode

Usage Guide When BGP GR function is enabled, the GR capability for all address families is enabled by default, except for address families that do not support GR capability. After GR capability is enabled, you can use this command in the address family mode to disable the address family's GR capability. The Configuration of this command in BGP mode is effective on IPv4 Unicast address family.
When BGP GP function is disabled, GR capability is disabled for all address families.

Configuration Examples The following example enables the graceful restart function of the global BGP.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp graceful-restart
Ruijie(config-router)# address-family ipv4
Ruijie(config-router-af)# bgp graceful-restart disable
```

Configuration Examples

Command	Description
bgp graceful-restart	Enables BGP's GR capability.
address-family ipv4	Enters BGP IPv4 address family mode.

Platform Description N/A

5.46 bgp graceful-restart restart-time

Use this command to configure the restart time of the BGP graceful-restart. Use the **no** form of this command to restore the default setting.

bgp graceful-restart restart-time *restart-time*

no bgp graceful-restart restart-time

Parameter Description

Parameter	Description
restart-time	GR Restarter-hoped longest waiting time before re-establishing the connection between the GR Helper and the GR Restarter, in the range from 1 to 3600 in the unit of seconds.

Defaults The default is 120.

Command Mode BGP configuration mode/BGP scope global configuration mode

Usage Guide

The restart time is advertised by GR Restarter to GR Helper, it is GR Restarter-hoped longest waiting time before re-establishing the connection between GR Helper and GR Restarter. After this time, if the BGP connection with GR Restarter is not in Established status, GR Helper will consider this BGP session failed and will restore the normal BGP. All the routing of the neighbor will be deleted during this period, affecting the data redistribution.

The restart time is advertised in the GR ability field of the BGP Open message. The GR restart time of the two ends of the session is not required to be the same, but it is recommended.

This command does not take effect immediately on all BGP connections that are set up successfully. To advertise the newly set restart time to the GR helper, you need to restart the BGP connection to negotiate the GR ability again and advertise the restart time by using the clear ip bgp command. The configured restart time should not be greater than the Hold Time of the BGP peer, if so, the Hold time will be the restart time when the GR ability is advertised to the BGP peer.

Configuration Examples

The following example configures the restart time of the BGP graceful-restart.

```
Ruijie(config)# router bgp 500
Ruijie(config-router)# bgp graceful-restart
Ruijie(config-router)# bgp graceful-restart restart-time 150
Ruijie(config-router)# no bgp graceful-restart restart-time
```

Related Commands

Command	Description
bgp graceful-restart	Enables the BGP graceful-restart.

Platform Description

N/A

5.47 bgp graceful-restart stalepath-time

Use this command to configure the time to help the device keep the route valid when executing the BGP graceful-restart. Use the **no** form of this command to restore the default setting.

bgp graceful-restart stalepath-time stalepath-time *time*

no bgp graceful-restart stalepath-time

Parameter Description

Parameter	Description
time	Longest time used to keep the stale route valid after restoring the connection with the neighbors, in the range from 1 to 3600 in the unit of seconds

Defaults

The default is 360.

Command Mode

BGP configuration mode

Usage Guide

This command is configured for the parameters of the GR Helper. The stalepath-time is the longest time of the GR Helper waiting to receive the EOR mark of the Restarter after restoring the connection with the GR Restarter. When the GR Helper detects that the connection with the GR Restarter fails, the original route of the Restarter is marked as the “Stale”. However these routes are still used for the routing calculation and forwarding.
The GR Helper updates the routes and cancels the “Stale” mark according to route updating information received from the GR Restarter. If routes marked as “Stale” are not updated in the stalepath-time period, they will be deleted. This mechanism is used to avoid failure in convergence of routes when the GR Helper fails to receive the EOR mark of the GR Restarter for a long time.

Configuration Examples

The following example configures the restart time of the BGP graceful-restart.

```
Ruijie(config)# router bgp 500
Ruijie(config-router)# bgp graceful-restart
Ruijie(config-router)# bgp graceful-restart stalepath-time 240
Ruijie(config-router)# no bgp graceful-restart stalepath-time
```

Related Commands

Command	Description
bgp graceful-restart	Enables the BGP graceful-restart.

Platform Description

N/A

5.48 bgp initial-advertise-delay

Use this command to configure the delay period before a BGP device sends its initial updates to peers. Use the **no** form or **default** form of this command to restore the default settings.

bgp initial-advertise-delay *delay-time* [*startup-time*] [**wait-for-controller**]

no bgp initial-advertise-delay

default bgp initial-advertise-delay

Use this command to enable the BGP delayed advertisement upon system restart. Thus, the route will be immediately sent after the prefix-list policy is matched. Use the **no** form or **default** form of this command to restore the default settings.

bgp initial-advertise-delay prefix-list *prefix-list-name*

no bgp initial-advertise-delay prefix-list

default bgp initial-advertise-delay prefix-list

Parameter Description

Parameter	Description
delay-time	The delay period, in seconds, before a BGP device sends its updates. The range is from 1 to 600. The default value is 1 second.
startup-time	The time for the BGP device restart. In the period, the neighbor does not send its updates to peers. The range is from 5 to 584,000. The unit is second and the default value is 600 seconds.

prefix-list-name	Name of the prefix-list. It cannot exceed 32 characters.
wait-for-controller	Configures the **wait-for-controller** command to ensure that routes are advertised only after the controller delivers configuration messages and receives EOR messages from the neighbors.

Defaults The initial advertisement delay is disabled by default.

Command Mode BGP configuration mode

Usage Guide

This command is used to configure parameters for delayed neighbor route advertisement during device restart.

delay-time indicates the longest time for sending a route to a neighbor after the BGP neighbor relationship is established. In normal cases, after the neighbor relationship is established, the first route is advertised immediately and subsequent routes are advertised based on the default time. For details, see the **neighbor advertisement-interval** command. **startup-time** indicates the configurable startup time and starts to count when the configuration command takes effect. Within the time specified by **startup-time**, routes to BGP neighbors are advertised periodically based on **delay-time**. This command can be used to change the route advertisement behavior from the BGP peer to neighbors after device restart. The **wait-for-controller** command is used to wait for route advertisement messages from the controller and trigger the BGP route advertisement behavior after EOR messages are received from neighbors. If EOR messages are not received from neighbors within the time specified by **startup-time**, routes are sent forcibly.

The prefix-list policy is configured to ensure that partial routes can be normally delivered. The prefix-list policy applies to distributed routes. Matched routes will be normally delivered without being affected by delayed advertisement. For details about the address family scope to which the prefix-list policy applies, see the **neighbor prefix-list** command.

This command is used by the administrator to adjust the BGP route advertisement behavior during device restart based on the hardware conditions, number of neighbors, number of routes, and actual deployment requirements.

Configuration Examples

The following example configures initial delay to 60 seconds within 500 seconds after BGP restart.

```
Ruijie(config)# router bgp 500
Ruijie(config-router)# bgp initial-advertise-delay 60 500
```

Related Commands

Command	Description
bgp graceful-restart	Enables the BGP graceful-restart.

Platform Description N/A

5.49 bgp install standby-path

Use this command to enable BGP multi-path bypass protection. Use the **no** form or **default** form of this command to restore the default settings.

bgp install standby-path

no bgp install standby-path

default bgp install standby-path

Parameter Description

Parameter	Description
N/A	N/A

Defaults The BGP multi-path bypass protection is disabled by default.

Command Mode BGP configuration mode; BGP IPv4 VRF address family configuration mode; BGP IPv6 VRF address family configuration mode

Usage Guide

⚠ The BGP multi-path bypass protection function and the FRR function cannot be enabled at the same time.

Configuration Examples

The following example enables BGP multi-path bypass protection.

```
Ruijie(config)# router bgp 500
Ruijie(config-router)# bgp install standby-path
```

Platform Description N/A

5.50 bgp log-neighbor-changes

Use this command to log the BGP status changes without turning on debug. Use the **no** form of this command to disable this function.

bgp log-neighbor-changes

no bgp log-neighbor-changes

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode BGP configuration mode/BGP scope global configuration mode

Usage Guide The debug command can also be used to log BGP status changes. But this command may consume many resources.

Configuration Examples The following example logs the BGP status changes without turning on debug.

```
Ruijie(config-router)# bgp log-neighbor-changes
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.

Platform Description None

5.51 bgp mac-mobility

Use this command to configure the MAC mobility detection. Use the **no** form of this command to disable this function. Use the **default** form of this command to restore the default settings.

bgp mac-mobility *timer count* [*delay-timer*]

no bgp mac-mobility

default bgp mac-mobility

Parameter Description

Parameter	Description
timer	Indicates the time using to detect the MAC mobility. During the time, if the MAC mobility is detected for *count* times, then the MAC conflict occurs and syslog wil be printed to inform users. By default, the time is 180s and ranges from 1s to 3600s.
count	Indicates the detection times. By default, it is 5 times and ranges from 1 to 360.
delay-timer	Delay time of the restoration of MAC conflict. By default, it is 180s and ranges from 1 to 3600.

Defaults

This function is enabled by default.
timer: 180s
count : 5
delay-timer: 180s

Command Mode BGP L2VPN EVPN address family mode

Usage Guide

MAC address mobility may occur many times. When MAC mobility is detected by a PE, a timer will be enabled (default *timer*: 180s). If the MAC mobility is detected for *count* times (default *count*: 5) before the time passes, then the MAC address is duplicated.
After the MAC conflict occurs, the corresponding EVPN route will not be advertised to neighbors

and a timer to delay the restoration will start (default timer: 180s). When the time runs out, the MAC conflict is deleted and the EVPN route is advertised again.

Configuration Examples

The following example configures MAC mobility detection.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family l2vpn evpn
Ruijie(config-router-af)# bgp mac-mobility 120 6
```

Related Commands

Command	Description
N/A	N/A

Platform Description

None

5.52 bgp maxas-limit

Use this command to set the maximum number of ASs in the BGP AS-PATH attribute. Use the **no** or **default** form of the command to restore the default configuration.

bgp maxas-limit *number*

no bgp maxas-limit

default bgp maxas-limit

Parameter Description

Parameter	Description
number	The maximum number of ASs in the BGP AS-PATH attribute. The range is from 1 to 512.

Defaults

No maximum number of ASs is set by default.

Command Mode

BGP configuration mode/BGP scope global configuration mode

Usage Guide

The routes exceeding the AS number limit are discarded directly, After changing the configuration, use the **clear** command to reset the neighbor and make the configuration take effect.

Configuration Examples

The following example sets the maximum number of ASs in the BGP AS-PATH attribute to 100.

```
Ruijie(config-router)# bgp maxas-limit 100
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

5.53 bgp maximum-neighbor

Use this command to configure the maximum number of BGP neighbors when sending warnings. Use the **no** or **default** form of the command to restore the default configuration.

bgp maximum-neighbor *numbers* **warning-only**

no bgp maximum-neighbor

default bgp maximum-neighbor

Parameter Description

Parameter	Description
numbers	Indicates maximum number of neighbor. Range: 1 to 15000.

Defaults The function is disabled by default.

Command Mode BGP configuration mode, BGP scope global configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the maximum number of neighbor as 1000.

```
Ruijie(config)#router bgp 100
Ruijie(config-router)#bgp maximum-neighbor 1000 warning-only
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.54 bgp maximum-prefix

Use this command to restrict the maximum number of routes in the BGP global or specified VRF. Use the **no** or **default** form of the command to restore the default configuration.

bgp maximum-prefix *numbers* [**vrf** *vrf-name*]

no bgp maximum-prefix [**vrf** *vrf-name*]

default bgp maximum-prefix [**vrf** *vrf-name*]

Parameter Description

Parameter	Description
vrf-name	Indicates name of a specific VRF.
numbers	Indicates number of routes. Range: 1 to 4,294,967,295.

Defaults The function is disabled by default.

Command Mode BGP configuration mode/ BGP scope global configuration mode

Usage Guide

When a route advertisement in an address family causes the current number of BGP routes to exceed the maximum number, a prompt indicating route overflow in the global or specified VRF is displayed, and the BGP global or specified VRF is set to the overflow state.

Run the **show bgp** { *addressfamily* | **all** } **summary** command to check routing information base status.

If the address family enters the overflow state because the BGP routing information prefix reaches the upper limit, it can be adjusted by **maximum-prefix**.

For IPv4 unicast routes, the routing information prefix may still be received if it is in the overflow state in the following cases:

1) The routing information of the same routing prefix already exists in the routing information base;

2) A route that covers the prefix (except the default route) already exists in the routing information base, and the next hop of the route is different from the next hop of the newly received route prefix.

Configuration Examples

The following example sets the maximum number of routes to 100.

```
Ruijie(config)#router bgp 100
Ruijie(config-router)#bgp maximum-prefix 100
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.55 bgp mp-error-handle session-retain

Use this command to retain BGP sessions when BGP protocol detects errors in multi-protocol route attributes. Use the **no** form of this command to restore the default setting.

bgp mp-error-handle session-retain [**recovery-time** *time*]

no bgp mp-error-handle session-retain

Parameter Description

Parameter	Description
recovery-time *time*	Configures the waiting time for auto route recovery. The parameter ranges from 10 to 4294967296 in the unit of seconds. The default is 120.

Defaults By default, BGP sessions will be interrupted when multi-protocol attribute errors are detected.

Command Mode BGP configuration mode/BGP scope global configuration mode

Usage Guide By default, when UPDATA packets are received from a neighbor, BGP sessions will be interrupted if multi-protocol attribute errors are detected, which will cause oscillation of routes of all the address families of the neighbor. An address family's route error will affect the stability of routes of other address families. After this command is configured, when an error of the route attribute of an address family occurs, all the route information of the address family and neighbor will be deleted, thus preventing impact on the BGP session and other protocol address families, improving BGP protocol's stability.

The option recovery-time is used t configure the waiting time for auto route recovery. To use the option, the neighbor must support the route refreshing capability. After recovery-time expires, BGP will send a route-refresh message to the neighbor's address family and re-notify the neighbor of the address family's all route information.

Configuration Examples The following example retains BGP sessions when BGP protocol detects errors in multi-protocol route attributes.

```
Ruijie(config-router)# bgp mp-error-handle session-retain
```

Configuration Examples

Command	Description
N/A	N/A

Platform Description N/A

5.56 bgp nexthop trigger delay

Use this command to configure the delay time for updating the routing table when the nexthop of the BGP route changes. Use the **no** form of this command to restore the default setting.

bgp nexthop trigger delay *delay-time*

no bgp nexthop trigger delay

Parameter Description

Parameter	Description
delay-time	Delay time for updating the routing table when the nexthop changes, in the range from 0 to 100 in the unit of seconds

Defaults The default is 5.

Command Mode BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode, BGP VPNv4/VPNv6 address family configuration mode/BGP L2VPN VPWS/VPLS/EVPN address family configuration mode or BGP Scope configuration mode.

Usage Guide This command is used to configure the delay time for updating the routing table when the nexthop changes, it takes effect when the bgp nexthop trigger enable switch is opened.

Configuration Examples

The following example retains BGP sessions when BGP protocol detects errors in multi-protocol route attributes.

```
Ruijie(config-router)# bgp nexthop trigger delay 30
```

Related Commands

Command	Description
bgp nexthop trigger enable	Enables the nexthop trigger.

Platform Description

None

5.57 bgp nexthop trigger enable

Use this command to enable the nexthop trigger update function. Use the **no** form of this command to disable this function.

bgp nexthop trigger enable

no bgp nexthop trigger enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults

This function is enabled by default.

Command Mode

BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode, BGP VPNv4/VPNv6 address family configuration mode/BGP L2VPN VPWS/VPLS/EVPN address family configuration mode or BGP Scope configuration mode.

Usage Guide

This command is used to enable the nexthop trigger update function.

Configuration Examples

The following example enables the nexthop trigger update function.

```
Ruijie(config-router)# bgp nexthop trigger enable
```

Related Commands

Command	Description
Bgp nexthop trigger delay	Sets the delay time for updating the routing table when the nexthop changes.

Platform Description

None

5.58 bgp notify unsupport-capability

Use this command to enable the neighbor address family capability detection function. Use the **no** form of this command to restore the default setting.

bgp notify unsupport-capability

no bgp notify unsupport-capability

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode BGP configuration mode/BGP scope global configuration mode.

Usage Guide When BGP neighbor address family capability negotiation is not fully consistent, neighbors can still be connected. After this command is configured, when an address family capability supported by the local device is not supported by the neighbor device, Notification packet that carries the address family that does not support the capability will be send.

Configuration Examples The following example enables the neighbor address family capability detection function.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp notify unsupport-capability
```

Configuration Examples

Command	Description
router bgp	Enables BGP protocol.

Platform Description N/A

5.59 bgp nsr

Use this command to enable the NSR function for BGP neighbors globally. Use the **no** form or **default** form of this command to restore the default settings.

bgp nsr

no bgp nsr

default bgp nsr

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode BGP configuration mode/BGP scope global configuration mode.

Usage Guide Run the **bgp nsr** command to enable the NSR function for BGP neighbors globally.
Run the **neighbor ha-mode nsr** command to enable the NSR function for specific BGP neighbors.

Configuration Examples The following example enables the NSR function for BGP neighbors globally.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp nsr
```

Platform Description N/A

5.60 bgp recursion host

Use this command to configure BGP routes to be recursive only to host routes. Use the **no** form or **default** form of this command to restore the default settings.
bgp recursion host
no bgp recursion host
default bgp recursion host

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, recursion is performed on BGP routes via exact matching.

Command Mode BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode, BGP VPNv4/VPNv6 address family configuration mode/BGP L2VPN VPWS/VPLS/EVPN address family configuration mode or BGP Scope configuration mode.

Usage Guide This function takes effect on indirect routes only.

Configuration Examples The following example enables BGP routes to be recursive only to host routes.

```
Ruijie(config-router)# bgp recursion host
```

Platform Description N/A

5.61 bgp redistribute-internal

Use this command to control BGP whether to allow redistributing routes learned from IBGP, such as RIP, OSPF and ISIS, to the IGP protocol. Use the **no** form of this command to disable this function.

bgp redistribute-internal

no bgp redistribute-internal

default bgp redistribute-internal

Parameter Description

Parameter	Description
N/A	N/A

Defaults IBGP routes are allowed by default to be redistributed to the IGP protocol.

Command Mode BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode or IPv4/IPv6 VRF address family configuration mode

Usage Guide This command is used to control whether IBGP routes are allowed to be redistributed to the IGP protocol.

Configuration Examples The following example enables the BGP to learn the redistributing routes from IBGP.

```
Ruijie(config-router)# bgp redistribute-internal
```

Related Commands

Command	Description
redistribute	Redistributes routes learned from other protocols.

Platform Description None

5.62 bgp redistribute unspecified instance ignore

Use this command to not apply the multi-instance redistribution to the current instance. Use the **no** or **default** form of this command to disable this function.

bgp redistribute unspecified instance ignore

no bgp redistribute unspecified instance ignore

default bgp redistribute unspecified instance ignore

Parameter Description

Parameter	Description
N/A	N/A

Defaults Multi-instance redistribution is applied by default.

Command BGP configuration mode, IPv4/IPv6 Unicast address family configuration mode, IPv4/IPv6 VRF

Mode address family configuration mode or BGP Scope configuration mode.

Usage Guide This command is used to control whether to apply the multi-instance redistribution to the current instance. After run the **router bgp redistribute** command, if this command is run, the configuration will not be applied; otherwise it is applied.

Configuration Examples The following example configures not apply the multi-instance redistribution.

```
Ruijie(config-router)# bgp redistribute unspecified instance ignore
```

Related Commands

Command	Description
show running-config	Check BGP configuration

Platform Description None

5.63 bgp refresh max-eor-time

Use this command to configure the timer for sending EoRR message to neighbors. Use the **no** form or **default** form of this command to restore the default settings.

bgp refresh max-eor-time *time*

no bgp refresh max-eor-time

default bgp refresh max-eor-time

Parameter Description

Parameter	Description
time	Timer for sending EoRR message. Range: 0, 600-3600, unit:s. 0 indicates the function is disabled.

Defaults By default, it is disabled.

Command Mode BGP configuration mode and BGP Scope configuration mode

Usage Guide If the BoRR message is sent to the neighbor but the subsequent EoRR message is not sent, the old routes of the neighbor can not be deleted. For this case, a timer for sending EoRR message is configured. After the BoRR message is sent, the timer is started (based on the neighbor + address family), and the time is set by the user. If the EoRR message is not sent after the set time, the EoRR message of the corresponding address family is sent to the neighbor. The timer is turned off if an EoRR message has been sent.

Configuration Examples The following example sets the timer for sending EoRR message as 600 seconds.

```
Ruijie(config-router)# bgp refresh max-eor-time 600
```

Platform Description N/A

5.64 bgp refresh stalepath-time

Use this command to configure the time of Enhanced Route-Refresh old route deletion timer. Use the **no** form or **default** form of this command to restore the default settings.

bgp refresh stalepath-time *time*

no bgp refresh stalepath-time

default bgp refresh stalepath-time

Parameter Description

Parameter	Description
time	Time of Enhanced Route-Refresh old route deletion timer. Range: 0, 600-3600, unit:s. 0 indicates the function is disabled.

Defaults By default, it is disabled.

Command Mode BGP configuration mode and BGP Scope configuration mode

Usage Guide If only receive the BoRR message but not the EoRR message, then the Enhanced Route-Refresh old routes will remain. For this case, a timer for deleting the old routes is configured. After the BoRR message is received, the timer is started (based on the neighbor + address family), and the time is set by the user. If the EoRR message is not received after the set time, the Enhanced Route-Refresh old routes are deleted. This timer is turned off if an EoRR message is received.

Configuration Examples The following example sets the timer as 600 seconds.

```
Ruijie(config-router)# bgp refresh stalepath-time 600
```

Platform Description N/A

5.65 bgp route-reflector attribute-change

Use this command to allow the BGP route reflector to modify route attributes. Use the **no** form or **default** form of this command to restore the default settings.

bgp route-reflector attribute-change

no bgp route-reflector attribute-change

default bgp route-reflector attribute-change

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, the function is disabled.

Command Mode BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode, BGP VPNv4/VPNv6 address family configuration mode, BGP L2VPN VPWS/VPLS/EVPN address family configuration mode or BGP Scope configuration mode.

Usage Guide N/A

Configuration Examples The following example allows the BGP route reflector to modify route attributes.

```
Ruijie(config-router)# bgp route-reflector attribute-change
```

Platform Description N/A

5.66 bgp router-id

Use this command to configure the ID-IP address of the device. Use the **no** form of this command to restore the default setting.

bgp router-id *ip-address*

no bgp router-id

Parameter Description

Parameter	Description
ip address	IPv4 address

Defaults The loop-back interface of the device is selected preferentially by default. If it does not exist, the device route-id of the device is used.

Command Mode BGP configuration mode, BGP scope global configuration mode or BGP IPv4/IPv6 VRF address family configuration mode

Usage Guide This command is used to configure IP address, the ID of the device when running the BGP protocol.

Configuration Examples The following example configures the ID-IP address of the device.

```
Ruijie(config-router)# bgp router-id 10.0.0.1
```

Related Commands

Command	Description
show ip bgp dampening dampened-paths	Displays the suppressed routing information.
bgp dampening	Enables the route dampening function and sets dampening parameters.

Platform Description None

5.67 bgp scan-rib disable

Use this command to update the routing table by event triggering. Use the **no** form of this command to restore the default setting.

bgp scan-rib disable

no bgp scan-rib disable

Parameter Description

Parameter	Description
N/A	N/A

Defaults Timely scan and update is enabled by default.

Command Mode BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode, BGP VPNv4/VPNv6 address family configuration mode, BGP Scope configuration mode or BGP L2VPN VPWS/VPLS/EVPN address family configuration mode

Usage Guide N/A

Configuration Examples The following example configures the timely scan for the BGP protocol.

```
Ruijie(config-router)# bgp scan-rib disable
```

Related Commands

Command	Description
bgp scan-time	Configures the interval for the BGP timely scan.

Platform Description None

5.68 bgp scan-time

Use this command to configure the interval for the BGP timely scan. Use the **no** form of this command to restore the default setting.

bgp scan-time *time*

no bgp scan-time

Parameter Description

Parameter	Description
time	Interval of the timely scan, in the range from 5 to 60 in the unit of seconds

Defaults The default is 60.

Command Mode BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode, BGP VPNv4/VPNv6 address family configuration mode or BGP Scope configuration mode.

Usage Guide This command is used to configure the interval for the BGP timely scan; it takes effect when bgp scan-rib enable is configured.

Configuration Examples The following example configures the interval for the BGP timely scan.

```
Ruijie(config-router)# bgp scan-time 30
```

Related Commands

Command	Description
bgp scan-rib enable	Enables timely scan of the routing table by BGP.

Platform Description None

5.69 bgp shutdown

Use this command to shut down all BGP connections.
bgp shutdown

Use this command to shut down all BGP connections gracefully.
bgp shutdown graceful [**community** *value*] [**delay** *time*]

Use the **no** form or **default** form of this command to restore the default settings.
no bgp shutdown
default bgp shutdown

Parameter Description

Parameter	Description
graceful	Shuts down BGP connections gracefully.
community *value*	Indicates the community value carried in the route sent to the neighbor. Format: AA:NN or a number in the range of 0 to 4,294,967,295.
delay *time*	Indicates the delay time (in seconds) for shutting down BGP connections. The value range is from 1 to 65,535.

Defaults By default, the BGP connections are not shutted down.

Command Mode BGP configuration mode/BGP scope global configuration mode

Usage Guide This command will shut down the effective connections created by BGP and delete all the routes information.
If you enable the function on BGP configuration mode or BGP scope global configuration mode, all the BGP connections will be shutted down.
If you enable the function on BGP IPv4 VRF address family configuration mode or BGP IPv6 VRF address family configuration mode, all the BGP connections on the corresponding VRF will be shutted down.
The feature enables the device to advertise a route with the lowest priority (the value of **local-preference** is **0** or the value of **med** is *4,294,967,295*) to a neighbor and carry the **gshut community** attribute in the route so that the neighbor updates routes and switch traffic to a backup link or other equivalent links in advance. The device shuts down the BGP connection with the neighbor after a period of time.

Configuration Examples The following example disables BGP connections globally.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp shutdown
```

The following example disables global BGP connections gracefully.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp shutdown graceful
```

Platform Description N/A

5.70 bgp sourced-paths

Use this command to enable the function of importing routes with multiple paths or next hops from other protocol modules. Use the **no** form of this command to disable the function of importing routes with multiple paths or next hops from other protocol modules. Use the **default** form of this command to restore the default settings.
bgp sourced-paths *protocol-type* **all**
no bgp sourced-paths *protocol-type* **all**
default bgp sourced-paths *protocol-type* **all**

Parameter Description

Parameter	Description
protocol-type	Source protocol type of a redistributed route: ● connected

	• static • rip • ospf • isis • arp-host (host route converted by ARP) • nd-route(route converted by ND) • aggregate (aggregation route)

Defaults Only routes with a single path or next hop can be imported from other protocol modules by default.

Command Mode BGP configuration mode, BGP IPv4 Unicast/VRF address family configuration mode, BGP IPv6 Unicast/VRF address family configuration mode, BGP scope global configuration mode

Default Level 14

Usage Guide This command needs to be used together with the redistribution command to import routes with multiple next hops from other protocols to BGP.

Configuration Examples The following example enables the function of importing static routes with multiple paths or next hops.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp sourced-paths static all
```

Verification Run the **show running-config** command to display the BGP configurations.

5.71 bgp tcp-source-check disable

Use this command to configure BGP's TCP source check function. Use **no** form of this command to disable this function.

bgp tcp-source-check disable

no bgp tcp-source-check disable

Parameter Description

Parameter	Description
-	-

Defaults This function is enabled by default.

Command Mode BGP configuration mode/BGP scope global configuration mode

Usage Guide After TCP source check function is disabled, all TCP connection requests will be received. After TCP connection is established, if no neighbor peer is configured on the local device, Notification packet will be send to refuse the BGP connection.

Configuration Examples The following example configures BGP's TCP source check function.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp tcp-source-check disable
```

Configuration Examples

Command	Description
router bgp	Enables BGP protocol.

Platform Description N/A

5.72 bgp timer accuracy-control

Use this command to configure BGP's internal timer accuracy control. Use **no** form of this command to restore the default setting.

bgp timer accuracy-control

no bgp timer accuracy-control

Parameter Description

Parameter	Description
-	-

Defaults This function is disabled by default.

Command Mode BGP configuration mode/BGP scope global configuration mode

Usage Guide By default, a deviation from the given time will occur on the BGP protocol's timer to prevent concurrent overtime of many timers. You can use this command to configure BGP protocol's timer to strictly implement the given time. It is recommended disabling this function unless necessary.

Configuration Examples The following example configures BGP's internal timer accuracy control.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp timer accuracy-control
```

Configuration Examples

Command	Description
router bgp	Enables BGP protocol.

Platform Description N/A

5.73 bgp update-delay

Use this command to set the maximum delay time of the BGP Speaker before sending the first updating information to neighbors. The **no** form of the command restores it to the default value. During the BGP graceful-restart, this command is used to update the delay time.

bgp update-delay *delay-time*

no bgp update-delay

Parameter Description

Parameter	Description
delay-time	Maximum delay time of the BGP Speaker before sending its route updating information, in the range from 0 to 3600 in the unit of seconds, 120 seconds by default. For BGP graceful-restart, it is the maximum time of waiting to receive the EOR message of all neighbors, in the range from 1 to 3600 in the unit of seconds.

Defaults The default is 120.

Command Mode BGP configuration mode/BGP scope global configuration mode

Usage Guide

With the BGP starting up, it first waits some time to connect with its neighbors, and then sends the updating message to these neighbors. After connecting with neighbors, the BGP does not send the updating message to them immediately, but waits some time to receive the updating routing message from all neighbors and then performs routing optimization calculation and finally advertises the route updating message to its neighbors, which improves the convergence time and reduces the calculation consumption. If the software sends the route updating information to its neighbors immediately, it may send the information again when it receives more optimized routes from other neighbors.

The **bgp update-delay** command is used to adjust the initial waiting time of the software, which is the maximum time, from establishing the connection with the first neighbor to performing the routing optimization calculation and sending the route advertisement. When the BGP graceful-restart is enabled, this command is also used to set the maximum waiting time to receive EOR messages from all neighbors. You can increase this value if there are many neighbors or the routing information of the neighbors is huge. If the number of neighbors is 100 and the average amount of routes is 5000, the update sending time that each neighbor completes all the routing is 1 second, then the update of all the routing needs 100 seconds; if the number of neighbors increases to 200, the Update Delay time can be set to 240 seconds, ensuring that all the routing can be updated with the Update Delay period. The specific time is also related to data transmission rate.

Configuration Examples

The following example sets the update-delay time to 200 seconds.

```
Ruijie(config)# router bgp 500
Ruijie(config-router)# bgp graceful-restart
Ruijie(config-router)# bgp update-delay 200
```

Related Commands

Command	Description
bgp graceful-restart	Enables the BGP graceful-restart.

Platform Description None

5.74 bgp update-rate

Use this command to set the maximum routes number sent by BGP Speaker per second. Use the **no** or **default** form of this command to restore the default settings.

bgp update-rate *route-number*

no bgp update-rate

default bgp update-rate

Parameter Description

Parameter	Description
route-number	Indicates the maximum routes number sent by BGP Speaker per second. The range is from 10 to 4294967295.

Defaults The function is disabled by default.

Command Mode BGP configuration mode/ BGP scope global configuration mode.

Usage Guide By default, BGP will directly calculate the routes which it receives and send the routes to the delivery queue of each neighbor, Run **bgp update-rate** command to set the maximum routes number. For example, if the maximum routes can be sent per second is 100 routes, and the BGP route table contains 200 routes, then the 200 routes will be sent to the delivery queue of its neighbor by two times analysis (Refers to the analysis on route sending, for example, 100 routes exist, but only 80 routes in it are suitable for sending).

Configuration Examples The following example set the maximum routes number sent by BGP Speaker per second to 100.

```
Ruijie(config)# router bgp 500
Ruijie(config-router)# bgp update-rate 100
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.75 bgp upgrade-cli

Use this command to set the BGP CLI display mode. Use the **no** or **default** form of this command to restore the default settings.

bgp upgrade-cli { af-mode | scope-mode }

no bgp upgrade-cli { af-mode | scope-mode }

default bgp upgrade-cli { af-mode | scope-mode }

Parameter Description

Parameter	Description
af-mode	CLI is displayed in address family configuration mode.
scope-mode	CLI is displayed in scope configuration mode.

Defaults

The default is **af-mode**, When you execute the **scope** command, the display mode is switched to scope configuration mode automatically.

Command Mode

BGP configuration mode, BGP scope global configuration mode.

Usage Guide

When the display mode is switched to the scope global configuration mode, all CLI commands will be displayed either in the scope configuration mode or the address-family mode that under the scope configuration mode.

Configuration Examples

The following example sets the scope global configuration mode as the BGP CLI display mode.

```
Ruijie(config)# router bgp 500
Ruijie(config-router)# bgp upgrade-cli scope-mode
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

5.76 bmp server

Use this command to configure the bmp server example and enter the bmp configuration mode. Use the **no** form of this command to close the bmp server example. Use the **default** form of this command to restore the default settings.

bmp server *server-number*

no bmp server *server-number*

default bmp server *server-number*

Parameter Description

Parameter	Description
server-number	Configures the example number of bmp monitoring server. Range: 1-8.

Defaults The default BMP protocol is closed.

Command Mode Global configuration mode

Default Level 14

Usage Guide Use this command to enable the BMP protocol

Configuration Examples

Enable the BMP protocol and specify the example number.

```
Ruijie(config)# bmp server 1

Ruijie(config-bmpsrvr)#
```

Verification Run the **show running-config** command to check the BGP configuration.

5.77 buffer-size

Use this command to configure the max bytes of packets in buffer. Use the **no** or **default** form of this command to restore the default settings.

buffer-size *maximum*

no buffer-size

default buffer-size

Parameter Description

Parameter	Description
maximum	Configure the max bytes of packet in buffer for BMP instance. Range: 40960-4294967295

Defaults The max bytes is not configured by default.

Command Mode BMP configuration mode

Default Level 14

Usage Guide

Use this command to configure the max bytes of packet in buffer for BMP instance. When the device can not forward monitor packets due to insufficient server memory or other reasons, these packets will continually occupy the memory space, so there should be a limit of the max bytes of packet in buffer. When bytes reach the limit, the session with BMP server will be reset to release the space.

Configuration Examples

Enable the BMP protocol, specify the instance number and set the max bytes of packet in buffer.

```
Ruijie(config)# bmp server 1
Ruijie(config-bmpsrvr)#buffer-size 409600000
Ruijie(config-bmpsrvr)#
```

Verification

Run the **show running-config** command to check the BGP configuration.

5.78 clear bgp advertise lowest-priority on-startup

Use this command to restore the priority of advertised routes.

clear bgp [**instance** *as-num*] **advertise lowest-priority on-startup**

Parameter Description

Parameter	Description
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.

Defaults

N/A

Command Mode

Privileged EXEC mode

Usage Guide

Run **bgp advertise lowest-priority on-startup** command to adjust the priority of advertised routes to the lowest upon device restart. Run **clear bgp advertise lowest-priority on-startup** command to restore the priority of advertised routes.

Configuration Examples

N/A

Platform Description

N/A

5.79 clear bgp all

Use this command to reset all BGP address-families. The content to be reset depends on the further parameters .

clear bgp [**instance** *as-num*] **all** [*as number*] [**soft**] [**in** | **out**]

Parameter Description

Parameter	Description
none parameter	Resets peer sessions in all address-families.
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
as-number	Resets sessions with all members in the specified AS. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
in	Resets the received routing information.
out	Resets the redistributed routing information.
soft	Soft-resets all routing information received/sent from/to the specified peer.
soft in	Soft-resets the received routing information.
soft out	Soft-resets the distributed routing information.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to reset sessions of all supported address-families, including the vrf session in every address-family.

Configuration Examples N/A

Related Commands

Command	Description
clear bgp ipv4 unicast	Resets the IPv4 unicast address-family.

Platform Description None

5.80 clear bgp all peer-group

Use this command to reset BGP's specific peer group. The reset content is determined by further parameters.

clear bgp [**instance** *as-num*] **all peer-group** *peer-group-name* [**soft**] [**in** | **out**]

Parameter Description

Parameter	Description
peer-group-name	Resets a specific peer group.
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
in	Resets received route information.
out	Resets allocated route information.
soft	Soft-resets received and sent route information.
soft in	Soft-resets received route information.
soft out	Soft-resets allocated route information.

Defaults -

Command Mode Privileged EXEC mode

Usage Guide This command will reset replies of all supported address families, including reply connection included in vrf in each address family.

Configuration Examples -

Configuration Examples

Command	Description
clear bgp ipv4 unicast	Resets BGP's IPv4 unicast address families.

Platform Description -

5.81 clear bgp all update-group

Use this command to reset sessions of all members in an update-group.

clear bgp [**instance** *as-num*] **all update-group** [*update-group-index* | *peer-address*] [**soft**] [**in** | **out**]

Parameter Description

Parameter	Description
update-group-index	Specifies the index of an update-group, in which the sessions of members need to be reset.
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
peer-address	Specifies the update-group, to which a peer whose session needs to be reset belongs.
-	Resets BGP sessions directly if no option is carried.
in	Resets received routing information.
out	Resets distributed routing information.
soft	Soft-resets sent and received routing information.
soft in	Soft-resets received routing information.
soft out	Soft-resets distributed routing information.

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide This command is used to reset BGP sessions of all members in an update-group.

Configuration Example The following example resets routing information received by all peers in an update group to which the peer with the IP address of 1.1.1.1 belongs.

```
Ruijie# clear bgp all update-group 1.1.1.1 in
```

5.82 clear bgp ipv4 unicast

Use this command to reset BGP IPv4 unicast address families. The reset content is determined by further parameters.

clear bgp [**instance** *as-num*] **ipv4 unicast** [**vrf** *vrf-name*] { ***** | *as-number* | *neighbor-address* } [**soft**] [**in** | **out**]

Parameter Description

Parameter	Description
vrf-name	VRF name
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the

	new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
*	Resets all peer group sessions under address families.
as-number	Resets sessions with all members in the specified AS.
neighbor-address	Resets sessions with the specified peer.
in	Resets received route information.
out	Resets allocated route information.
soft	Soft-resets received and sent route information.
soft in	Soft-resets received route information.
soft out	Soft-resets allocated route information.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is the same as **clear ip bgp** in terms of the function and parameters.

Configuration Examples N/A

Configuration Examples

Command	Description
N/A	N/A

Platform Description N/A

5.83 clear bgp ipv4 unicast dampening

Use this command to clear the flap information and disable route dampening.

clear bgp [**instance** *as-num*] **ipv4 unicast [vrf *vrf-name*] dampening [** *ip-address* **[** *mask* **]]**

Parameter Description

Parameter	Description
vrf-name	VRF instance name
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
-	Clears the flap information of all routes.
address	IP address

mask	Mask

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to clear the BGP route dampening information and release suppressed routes. This command can be used to restart the BGP route dampening.

Configuration Examples The following example clears the flap information and disables route dampening.

```
Ruijie# clear ip bgp dampening 192.168.0.0 255.255.0.0
```

Related Commands

Command	Description
show ip bgp dampening dampened-paths	Displays the suppressed routing information.
bgp dampening	Enables the route dampening and sets the dampening parameters.

Platform Description None

5.84 clear bgp ipv4 unicast external

Use this command to reset all EBGP connections.

clear bgp [**instance** *as-num*] **ipv4 unicast [vrf *vrf-name*] external [soft] [in | out]**

Parameter Description

Parameter	Description
vrf-name	VRF name.
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
in	Resets received route information.
out	Resets allocated route information.
soft	Soft-resets all routing information received/sent from/to the specified peer.
soft in	Soft-resets the received routing information.
soft out	Soft-resets the distributed routing information.

Defaults N/A

Command Privileged EXEC mode

Mode

Usage Guide This command is used to reset the specified external BGP connection.

Configuration Examples The following example resets all EBGP connections.

```
Ruijie# clear bgp ipv4 unicast external in
```

Related Commands

Command	Description
clear ip bgp	Resets the BGP session.
show ip bgp neighbors	Displays the neighbor information.

Platform Description None

5.85 clear bgp ipv4 unicast flap-statistics

Use this command to clear the route flap information.

clear bgp [**instance** *as-num*] **ipv4 unicast [vrf *vrf-name*] flap-statistics [*address* [*mask*]]**

Parameter Description

Parameter	Description
vrf-name	VRF name.
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
-	Clears all route flap information
address	IP address
mask	Mask

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command can be used only to clear the statistics of unsuppressed routes. It does not release the suppressed routes. To clear all route statistics and release the suppressed routes, run the **clear ip bgp dampening** command.

Configuration Examples The following example clears the route flap information.

```
Ruijie# clear bgp ipv4 unicast flap-statistics
```

Related Commands

Command	Description
bgp dampening	Enables the route dampening function and sets dampening parameters.
show ip bgp	Displays the BGP route entry.

Platform Description None

5.86 clear bgp ipv4 unicast peer-group

Use this command to reset the session with all members in the peer group.

clear bgp [**instance** *as-num*] **ipv4 unicast [vrf** *vrf-name* **] peer-group** *peer-group-name* **[soft] [in | out]**

Parameter Description

Parameter	Description
vrf-name	VRF name
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
peer-group-name	Name of the peer group
in	Resets received route information.
out	Resets allocated route information.
soft	Soft-resets all routing information received/sent from/to the specified peer.
soft in	Soft-resets for the received routing information.
soft out	Soft-resets the distributed routing information.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command resets the BGP session with all members in the peer group.

Configuration Examples The following example resets the session with all members in the peer group.

```
Ruijie# clear bgp ipv4 unicast peer-group my-group in
```

Related Commands

Command	Description
clear ip bgp	Resets the BGP session.
show ip bgp	Displays the BGP route entry.

Platform Description None

5.87 clear bgp ipv4 unicast table-map

Use this command to update the table-map setting under the IPv4 unicast address family of BGP.

clear bgp [**instance** *as-num*] **ipv4 unicast** [**vrf** *vrf-name*] **table-map**

Parameter Description

Parameter	Description
vrf-name	VRF name
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.

Defaults -

Command Mode Privileged EXEC mode

Usage Guide Re-apply table-map setting and update allocated core route table information.

Configuration Examples -

Parameter Description

Command	Description
clear ip bgp	Resets BGP's IPv4 unicast address families.

Platform Description -

5.88 clear bgp ipv4 unicast update-group

Use this command to reset sessions of all members in an update-group in the IPv4 unicast address family.

clear bgp [**instance** *as-num*] **ipv4 unicast** [**vrf** *vrf-name*] **update-group** [*update-group-index* | *peer-address*] [**soft**] [**in** | **out**]

Parameter Description

Parameter	Description
vrf-name	Specifies the name of a VRF instance. A global VRF instance is used if no VRF instance name is entered.
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
update-group-index	Specifies the index of an update-group, in which the sessions of members need to be reset.
peer-address	Specifies the update-group, to which a peer whose session needs to be reset belongs.
-	Resets BGP sessions directly if no option is carried.
in	Resets received routing information.
out	Resets distributed routing information.
soft	Soft-resets sent and received routing information.
soft in	Soft-resets received routing information.
soft out	Soft-resets distributed routing information.

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide This command is used to reset BGP sessions of all members in an update-group in the IPv4 unicast address family.

Configuration Example The following example resets routing information received by all peers in an update group to which the peer with the IP address of 1.1.1.1 in the IPv4 unicast address family belongs.

```
Ruijie# clear bgp ipv4 unicast update-group 1.1.1.1 in
```

5.89 clear bgp ipv6 unicast

Use this command to reset BGP's IPv6 unicast address families.

clear bgp [**instance** *as-num*] **ipv6 unicast** [**vrf** *vrf-name*] { ***** | *as-number* | *neighbor-address* } [**soft**] [**in** | **out**]

Parameter Description

Parameter	Description
vrf-name	VRF name
instance	Specify the instance

as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
*****	Resets all peer group sessions under address families.
as-number	Resets sessions with all members in the specified AS. In 10.4(3) or a later version, adds support for 4-byte AS numbers. The new AS number ranges from 1 to 4294967295, or 1 and 65535.65535 in the dotted mode.
neighbor-address	Resets sessions with the specified peer.
in	Resets received route information.
out	Resets allocated route information.
soft	Soft-resets received and sent route information.
soft in	Soft-resets received route information.
soft out	Soft-resets allocated route information.

Defaults -

Command Mode Privileged EXEC mode

Usage Guide The function is similar with **clear bgp ipv4 unicast,** but applies to different address families.

Configuration Examples -

Configuration Examples

Command	Description
clear bgp ipv4 unicast	Resets BGP's IPv4 unicast address families.

Platform Description -

5.90 clear bgp ipv6 unicast dampening

Use this command to clear flap information and disable route dampening.

clear bgp [**instance** *as-num*] **ipv6 unicast** [**vrf** *vrf-name*] **dampening** [*ip-address* [*mask*]]

Parameter Description

Parameter	Description
vrf-name	VRF name

instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
-	Clears all routes' flap information.
ip-address	IP address
mask	Mask code

Defaults -

Command Mode Privileged EXEC mode

Usage Guide You can use this command to clear BGP's route flap information and disable route dampening. The command can restart BGP's route flap.

Configuration Examples The following example clears flap information and disables route dampening.

```
Ruijie# clear bgp ipv6 unicast dampening 192.168.0.0 255.255.0.0
```

Configuration Examples

Command	Description
bgp dampening	Enables the route dampening function and sets dampening parameters.

Platform Description -

5.91 clear bgp ipv6 unicast external

Use this command to reset all EBGP connection of IPv6 unicast address families.

clear bgp [**instance** *as-num*] **ipv6 unicast** [**vrf** *vrf-name*] **external** [**soft**] [**in** | **out**]

Parameter Description

Parameter	Description
vrf-name	VRF name
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
in	Resets received route information.

out	Resets allocated route information.
soft	Soft-resets received and sent route information.
soft in	Soft-resets received route information.
soft out	Soft-resets allocated route information.

Defaults -

Command Mode Privileged EXEC mode

Usage Guide You can use this command to reset all the specified external BGP connection.

Configuration Examples The following example resets all EBGP connection of IPv6 unicast address families.

```
Ruijie# clear bgp ipv6 unicast external in
```

Configuration Examples

Command	Description
clear ip bgp	Resets BGP sessions.
show ip bgp neighbors	Displays BGP neighbors' information.

Platform Description -

5.92 clear bgp ipv6 unicast flap-statistics

Use this command to clear IPv6 unicast address families' route flap statistics.

clear bgp [**instance** *as-num*] **ipv6 unicast** [**vrf** *vrf-name*] **flap-statistics** [*address* [*mask*]]

Parameter Description

Parameter	Description
vrf-name	VRF name
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
-	Clears all route information's flap information.
address	IP address
mask	Mask code

Defaults -

Command Mode Privileged EXEC mode

Usage Guide This command can only clear statistics of routes that are not damped and will not relieve damped routes. To clear statistics of all route information and relieve damped routes, use the **clear bgp ipv4 unicast dampening** command.

Configuration Examples The following example clears IPv6 unicast address families' route flap statistics.

```
Ruijie# clear bgp ipv6 unicast flap-statistics
```

Configuration Examples

Command	Description
bgp dampening	Enables the route dampening function and sets dampening parameters.
show ip bgp	Displays BGP route entries.

Platform Description -

5.93 clear bgp ipv6 unicast peer-group

Use this command to reset sessions with all members in the peer group.

clear bgp [**instance** *as-num*] **ipv6 unicast** [**vrf** *vrf-name*] **peer-group** *peer-group-name* [**soft**] [**in** | **out**]

Parameter Description

Parameter	Description
vrf-name	VRF name
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
peer-group-name	Peer group name
in	Resets received route information.
out	Resets allocated route information.
soft	Soft-resets received and sent route information.
soft in	Soft-resets received route information.
soft out	Soft-resets allocated route information.

Defaults -

Command Mode Privileged EXEC mode

Usage Guide Use this command to reset BGP sessions with all members in the peer group.

Configuration Examples The following example resets sessions with all members in the peer group.

```
Ruijie# clear bgp ipv6 unicast peer-group my-group in
```

Configuration Examples

Command	Description
clear ip bgp	Resets BGP sessions.
show ip bgp	Displays BGP route entries.

Platform Description -

5.94 clear bgp ipv6 unicast table-map

Use this command to update the table-map setting under the IPv6 unicast address family of BGP.

clear bgp [**instance** *as-num*] **ipv6 unicast** [**vrf** *vrf-name*] **table-map**

Parameter Description

Parameter	Description
vrf-name	VRF name
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.

Defaults -

Command Mode Privileged EXEC mode

Usage Guide -

Configuration Examples -

Configuration Examples

Command	Description
clear ip bgp	Resets BGP's IPv4 unicast address families.

Platform Description -

5.95 clear bgp ipv6 unicast update-group

Use this command to reset sessions of all members in an update-group in the IPv6 unicast address family.
clear bgp [**instance** *as-num*] **ipv6 unicast** [**vrf** *vrf-name*] **update-group** [*update-group-index* | *neighbor-address*] [**soft**] [**in** | **out**]

Parameter Description

Parameter	Description
vrf-name	Specifies the name of a VRF instance. A global VRF instance is used if no VRF instance name is entered.

instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
update-group-index	Specifies the index of an update-group, in which the sessions of members need to be reset.
neighbor-address	Specifies the update-group, to which a peer whose session needs to be reset belongs.
-	Resets BGP sessions directly if no option is carried.
in	Resets received routing information.
out	Resets distributed routing information.
soft	Soft-resets sent and received routing information.
soft in	Soft-resets received routing information.
soft out	Soft-resets distributed routing information.

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide This command is used to reset BGP sessions of all members in an update-group in the IPv6 unicast address family.

Configuration Example The following example resets routing information received by all peers in an update group to which the peer with the IP address of 1111::1111 in the IPv6 unicast address family belongs.

```
Ruijie# clear bgp ipv6 unicast update-group 1111::1111 in
```

5.96 clear bgp l2vpn evpn

Use this command to reset BGP EVPN address families.

clear bgp [**instance** *as-num*] **l2vpn evpn** { ***** | *as-number* | *neighbor-address* } [**soft**] [**in** | **out**]

Parameter Description

Parameter	Description
*	Resets all peer group sessions under address families.
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
as-number	Resets sessions with all members in the specified AS. In 10.4(3) or a later version, adds support for 4-byte AS numbers. The

	new AS number ranges from 1 to 4294967295, or 1 and 65535.65535 in the dotted mode.
neighbor-address	Resets sessions with the specified peer.
in	Resets received route information.
out	Resets allocated route information.
soft	Soft-resets received and sent route information.
soft in	Soft-resets received route information.
soft out	Soft-resets allocated route information.

Defaults -

Command Mode Privileged EXEC mode

Usage Guide The function is similar with **clear bgp ipv4 unicast,** but applies to different address families.

Configuration Examples -

Configuration Examples

Command	Description
clear bgp ipv4 unicast	Resets BGP's IPv4 unicast address families.

Platform Description -

5.97 clear bgp l2vpn evpn dampening

Use this command to clear flap information and disable route dampening.

clear bgp [**instance** *as-num*] **l2vpn evpn dampening**

Parameter Description

Parameter	Description
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.

Defaults -

Command Mode Privileged EXEC mode

Usage Guide You can use this command to clear BGP's route flap information and relieve damped routes. The command can restart BGP's route flap.

Configuration Examples The following example clears flap information and disables route dampening.

```
Ruijie# clear bgp l2vpn evpn dampening
```

Platform Description N/A

5.98 clear bgp l2vpn evpn external

Use this command to reset all EBGP connection of BGP EVPN address families.

clear bgp [**instance** *as-num*] **l2vpn evpn external** [**soft**] [**in** | **out**]

Parameter Description

Parameter	Description
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
in	Resets received route information.
out	Resets allocated route information.
soft	Soft-resets received and sent route information.
soft in	Soft-resets received route information.
soft out	Soft-resets allocated route information.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide You can use this command to reset all the specified external BGP connection.

Configuration Examples The following example resets all EBGP connection of L2VPN EVPN address families.

```
Ruijie# clear bgp l2vpn evpn external in
```

Platform Description N/A

5.99 clear bgp l2vpn evpn flap-statistics

Use this command to clear BGP EVPN address families' route flap statistics.

clear bgp [**instance** *as-num*] **l2vpn evpn flap-statistics**

Parameter Description

Parameter	Description
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command can only clear statistics of routes that are not damped and will not relieve damped routes. To clear statistics of all route information and relieve damped routes, use the **clear bgp l2vpn evpn dampening** command.

Configuration Examples The following example clears L2VPN EVPN address families' route flap statistics.

```
Ruijie# clear bgp l2vpn evpn flap-statistics
```

Platform Description N/A

5.100 clear bgp l2vpn evpn peer-group

Use this command to reset sessions of all members in the peer group.

clear bgp [**instance** *as-num*] **l2vpn evpn peer-group** *peer-group-name* [**soft**] [**in** | **out**]

Parameter Description

Parameter	Description
peer-group-name	Peer group name
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
in	Resets received route information.

out	Resets allocated route information.
soft	Soft-resets received and sent route information.
soft in	Soft-resets received route information.
soft out	Soft-resets allocated route information.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Use this command to reset BGP sessions of all members in the peer group.

Configuration Examples The following example displays that the L2VPN EVPN address family resets received route information of all members in the peer group my-group.

```
Ruijie# clear bgp l2vpn evpn peer-group my-group in
```

Platform Description N/A

5.101 clear bgp l2vpn evpn update-group

Use this command to reset sessions of all members in an update-group of L2VPN EVPN address family.

clear bgp [**instance** *as-num*] **l2vpn evpn update-group** [*update-group-index* | *neighbor-address*] [**soft**] [**in** | **out**]

Parameter Description

Parameter	Description
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
update-group-index	Specifies the index of an update-group, in which the sessions of members need to be reset.
Neighbor-address	Specifies the update-group, to which a peer whose session needs to be reset belongs.
-	Resets BGP sessions directly if no option is carried.
in	Resets received routing information.
out	Resets distributed routing information.
soft	Soft-resets sent and received routing information.
soft in	Soft-resets received routing information.
soft out	Soft-resets distributed routing information.

Command Privileged EXEC mode

Mode

Default Level 14

Usage Guide This command is used to reset BGP sessions of all members in an update-group of L2VPN EVPN address family.

Configuration Example The following example resets routing information received by all peers in an update group of L2VPN EVPN address family to which the peer with the IP address of 1.1.1.1 belongs.

```
Ruijie# clear bgp l2vpn evpn update-group 1.1.1.1 in
```

5.102 clear bmp

Use this command to reset the BGP protocol. The reset content is determined by consequent parameters.

clear bmp { all | server *server-number* **}**

Parameter Description

Parameter	Description
all	Resets all BMP servers
server-number	Resets the specified BMP servers. Range: 1-8.

Defaults N/A

Command Mode Privileged mode

Usage Guide Use this command to disconnect from the BMP server and then reconnect to it.

5.103 clear evpn conflict mac

Use this command to clear MAC information and other statistics of conflicts occurring in EVPN.

clear evpn conflict mac [*vni-id*]

Parameter Description

Parameter	Description
vni-id	Clears MAC information and other statistics of conflicts occurring on a specified L2VNI.

5.104 clear ip bgp

Use this command to reset the BGP session.

clear ip bgp [**instance** *as-num*] **[vrf** *vrf-name* **] { * |** *as-number* **|** *neighbor-address* **} [soft] [in | out]**

Parameter Description

Parameter	Description
vrf-name	VRF name.
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
*	Resets all the current BGP sessions and the OVERFLOW status of BGP ipv4 unicast address family.
neighbor-address	Resets the BGP session with the specified peer (IPv4 or IPv6).
as number	Resets sessions with all members in the specified AS. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
in	Reset the received routing information.
out	Reset the redistributed routing information.
soft	Soft-reset all routing information received/sent from/to the specified peer
soft in	Soft-reset the received routing information.
soft out	Soft-reset the distributed routing information.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide

At any time, once the routing policy or BGP configuration changes, an effective way must be available to implement the new routing policy or configuration. Traditional measure is to close the BGP connection and establish a new one.

This product supports implementing a new routing strategy without closing the BGP session connection by soft-resetting BGP.

For the peer that does not support the route refresh function, you may run the **neighbor soft-reconfiguration inbound** command to keep a copy of original routing information of every specified BGP peer on the local BGP speaker. This will consume some resources.

You can use the **show ip bgp neighbors** command to see whether the BGP peer supports the route refresh function. If it is supported, you need not to execute the **neighbor**

soft-reconfiguration inbound command when the inbound routing strategy changes.

All connected BGP routers must support the route refresh function to execute this command. This product supports the route refresh function.

Configuration Examples

The following example resets the BGP session.

```
Ruijie# clear bgp ipv4 unicast *
```

Related Commands

Command	Description
neighbor soft-reconfiguration inbound	(Optional) Restarts the BGP session and reserves the unchanged route information sent by the BGP peer (group).
show ip bgp	Displays the BGP route entry.

Platform Description

None

5.105 clear ip bgp dampening

Use this command to clear the dampening information and disable route dampening.

clear ip bgp [**instance** *as-num*] **[vrf** *vrf-name* **] dampening** [*ip-address* [*mask*]]

Parameter Description

Parameter	Description
vrf-name	VRF name
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
address	IP address
mask	Mask

Defaults

N/A

Command Mode

Privileged EXEC mode

Usage Guide

This command is used to clear the BGP route flap information and disable route dampening. This command can be used to restart BGP route dampening.

Configuration Examples

The following example clears the dampening information and disables route dampening.

```
Ruijie# clear ip bgp dampening 192.168.0.0 255.255.0.0
```

Related Commands

Command	Description
show ip bgp dampening dampened-paths	Displays the suppressed routing information.
bgp dampening	Enables the route dampening function and sets dampening parameters.

Platform Description None

5.106 clear ip bgp external

Use this command to reset all EBGP connections.

clear ip bgp [**instance** *as-num*] **[vrf *vrf-name*] external [soft] [in | out]**

Parameter Description

Parameter	Description
vrf-name	VRF name.
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
in	Reset the received routing information.
out	Reset the redistributed routing information.
soft in	Soft-resets the received routing information.
soft out	Soft-resets the distributed routing information.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to reset the specified external BGP connection.

Configuration Examples The following example resets all EBGP connections.

```
Ruijie# clear ip bgp external in
```

Related Commands

Command	Description
clear ip bgp	Resets the BGP session.
show ip bgp neighbors	Displays the neighbor information.

Platform Description None

5.107 clear ip bgp flap-statistics

Use this command to clear the routes vibration statistics of the IPv4 unicast address family.

clear ip bgp [**instance** *as-num*] **[vrf *vrf-name*] flap-statistics** [*ip-address* [*mask*]]

Parameter Description

Parameter	Description
vrf-name	VRF name.
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
address	IP address
Mask	Mask

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command can be used only to clear statistics of unsuppressed routes. It does not release the suppressed routes. To clear all route statistics and release the suppressed routes, run the **clear ip bgp dampening** command.

Configuration Examples The following example clears the routes vibration statistics of the IPv4 unicast address family.

```
Ruijie# clear ip bgp flap-statistics
```

Related Commands

Command	Description
bgp dampening	Enables the route dampening function and sets dampening parameters.
show ip bgp	Displays the BGP route entry.

Platform Description None

5.108 clear ip bgp peer-group

Use this command to reset the session with all members in the peer group.

clear ip bgp [**instance** *as-num*] **[vrf** *vrf-name* **] peer-group** *peer-group-name* **[soft] [in | out]**

Parameter Description

Parameter	Description
vrf-name	VRF name.
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later

	versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
peer-group-name	Name of the peer group
in	Reset the received routing information.
out	Reset the redistributed routing information.
soft	Soft-resets all routing information received/sent from/to the specified peer
soft in	Soft-resets the received routing information.
soft out	Soft-resets the distributed routing information.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command resets the BGP session with all members in the peer group.

Configuration Examples The following example resets the session with all members in the peer group.

```
Ruijie# clear ip bgp peer-group my-group in
```

Related Commands

Command	Description
clear ip bgp	Resets the BGP session.
show ip bgp	Displays the BGP route entry.

Platform Description None

5.109 clear ip bgp table-map

Use this command to update the table-map's route information applied by IPv4 unicast address family.

clear ip bgp [**instance** *as-num*] [**vrf** *vrf-name*] **table-map**

Parameter Description

Parameter	Description
vrf-name	vrf name
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to update the route information of the applied table-map.

Configuration Examples The following example updates the table-map's route information applied by IPv4 unicast address family.

```
Ruijie# clear ip bgp table-map
```

Related Commands

Command	Description
clear ip bgp	Resets the BGP session.
show ip bgp	Displays the BGP route entry.

Platform Description None

5.110 clear ip bgp update-group

Use this command to reset sessions of all members in an update-group in the IPv4 unicast address family.
clear ip bgp [**instance** *as-num*] [**vrf** *vrf-name*] **update-group** [*update-group-index* | *neighbor-address*] [**soft**] [**in** | **out**]

Parameter Description

Parameter	Description
vrf-name	Specifies the name of a VRF instance. A global VRF instance is used if no VRF instance name is entered.
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
update-group-index	Specifies the index of an update-group, in which the sessions of members need to be reset.
neighbor-address	Specifies the update-group, to which a peer whose session needs to be reset belongs.
-	Resets BGP sessions directly if no option is carried.
in	Resets received routing information.
out	Resets distributed routing information.
soft	Soft-resets sent and received routing information.
soft in	Soft-resets received routing information.
soft out	Soft-resets distributed routing information.

Command Mode	Privileged EXEC mode
Default Level	14
Usage Guide	This command is used to reset BGP sessions of all members in an update-group in the IPv4 unicast address family.
Configuration Example	The following example resets routing information received by all peers in an update group to which the peer with the IP address of 1.1.1.1 in the IPv4 unicast address family belongs. `Ruijie# clear ip bgp update-group 1.1.1.1 in`

5.111 default-information originate

Use this command to enable BGP to distribute the default route. Use the **no** form of this command to restore the default setting.

default-information originate

[no] default-information originate

Parameter Description	Parameter	Description
	N/A	N/A

Defaults	This function is disabled by default.
Command Mode	BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IP v6 VRF address family configuration mode, BGP Scope configuration mode
Usage Guide	This command is used to control whether the redistributed default route is effective, and this command needs to be configured together with the **redistribute** command. It takes effect only when a default route exists in the redistributed route. This command is similar to the **network** command. The difference is that in the process of configuring the former, the **redistribute** command must be configured explicitly to redistribute the default route, only in this case, the redistributed default route is effective. For the later command, the IGP must have the default route.
Configuration Examples	The following example enables BGP to distribute the default route. `Ruijie(config-router)# default-information originate`

Related Commands	Command	Description
	network	Configures routes to be advertised.
	redistribute	Redistributes routes of other protocol.

Platform Description None

5.112 default-metric

Use this command to set the metric for route redistribution. Use the **no** form of this command to restore the default setting.

default-metric *number*

no default-metric

Parameter Description

Parameter	Description
number	Metric number, in the range from 1 to 4294967295

Defaults No metric is set by default.

Command Mode BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IP v6 VRF address family configuration mode, BGP Scope configuration mode

Usage Guide This command sets the metric of routes to be redistributed for integrity. The metric set by the command cannot cover that set by the redistribute metric command. The value is 0 when the default metric applies to redistributed connected routes.

Configuration Examples The following example sets the metric for route redistribution.

```
Ruijie(config-router)# default-metric 45
```

Related Commands

Command	Description
redistribute	Redistributes routes of other protocol.

Platform Description None

5.113 description

Use this command to set the description for BMP instance. Use the **no** form of this command to delete the description or the **default** form of this command to restore the default settings.

description *text*

no description

default description

Parameter Description

Parameter	Description
text	Text to describe the BMP instance, up to 80 characters allowed.

Defaults The function is disabled by default.

Command Mode BMP configuration mode

Usage Guide The command is used to add description to bmp instance, so as to help users remember the features of the bmp instance.

Configuration Examples The following example sets the description for bmp instance.

```
Ruijie(config)# bmp server 1
Ruijie(config-bmpsrvr)# description test
```

Related Commands

Command	Description

Platform Description None

5.114 distance bgp

Use this command to set different management distances for different types of BGP routes. Use the **no** form of this command to restore the default setting.

distance bgp *external-distance internal-distance local-distance*

no distance bgp

Parameter Description

Parameter	Description
external-distance	Route management distance learned from EBGP peers, in the range from 1 to 255
internal-distance	Route management distance learned from IBGP peers, in the range from 1 to 255
local-distance	Specifies the management distance of route learned from peers. However, the optimal one can be learned from the IGP. In general, these routes are indicated by the Network Backdoor command. The value is in the range from 1 to 255

Defaults The parameter defaults are as follows:
external-distance - 20
internal-distance - 200
local-distance - 200

Command Mode BGP configuration mode/BGP scope global configuration mode

Usage Guide

It is not recommended to change the management distance of the BGP route. If it is necessary, observe the following points:

- The management distance of "external-distance" must be shorter than those of other IGP routing protocols (such as OSPF and RIP);
- The internal-distance and local-distance should have longer management distances than other IGP routing protocols.

Configuration Examples

The following example sets different management distances for different types of BGP routes.

```
Ruijie(config-router)# distance bgp 20 20 200
```

Related Commands

Command	Description
neighbor soft-reconfiguration inbound	Restarts the BGP session and reserves the unchanged route information sent by the BGP peer (group).
show ip bgp	Displays the BGP route entry.

Platform Description

None

5.115 evpn

Use this command to enter EVPN configuration mode. Use the **no** or **restore** form of this command to restore the default settings.

evpn

no evpn

default evpn

Parameter Description

Parameter	Description
N/A	N/A

Defaults

By default, the EVPN configuration mode is disabled.

Command Mode

Global configuration mode

Usage Guide

Use this command to enter EVPN configuration mode. Use the **exit** command to exit the EVPN configuration mode

Configuration Examples

The following example enters EVPN configuration mode.

```
Ruijie(config)# evpn
```

Platform Description N/A

5.116 exit-address-family

Use this command to exit BGP address-family configuration mode.

exit-address-family

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode BGP address-family configuration mode

Usage Guide This command can be used to exit from various address-family modes of BGP to BGP configuration mode.

Configuration Examples The following example exits the BGP address-family configuration mode.

```
Ruijie(config-router-af)#exit-address-family
```

Related Commands

Command	Description
address-family ipv4	Enters IPv4 address family configuration mode.

Platform Description None

5.117 export map(EVPN VNI)

Use this command to configure the route map for exporting the extended community attribute of EVPN routes from the local device to the remote device. Use the **no** form of this command to delete the route map for exporting the extended community attribute of EVPN routes from the local device to the remote device. Use the **default** form of this command to restore the default settings.

export map *routemap-name*

no export map

default export map

Parameter Description

Parameter	Description
routemap-name	Name of the route map

Defaults No route map is configured for exporting the extended community attribute by default.

Command Mode EVPN VNI configuration mode.

Default Level 14

Usage Guide This command is used to modify the extended community attribute advertised by a type 5 route converted from a local EVPN route or IP route.
This command supports only one route map, and the old configuration is overwritten by the new configuration.

Configuration Examples The following example configures a route map for exporting the extended community attribute associated with map1 on VNI 1.

```
Ruijie(config)# evpn
Ruijie(config-evpn)# vni 1
Ruijie(config-evpn-vni)# export map map1
```

Verification Run the **show running-config** command to display the configurations.

5.118 failure-retry-delay

Use this command to configure the interval to reconnect to the BMP server. Use the **default** form of this command to restore the default settings.
failure-retry-delay *seconds*
no failure-retry-delay
default failure-retry-delay

Parameter Description

Parameter	Description
seconds	Interval to reconnect to the BMP server, in the range of 30 to 720 seconds.

Defaults No interval is configured by default.

Command Mode BMP configuration mode.

Default Level 14

Usage Guide

Configuration Examples The following example configures the interval as 60 seconds.

```
Ruijie(config)# bmp server 1
Ruijie(config-bmpsrvr)# failure-retry-delay 60
```

Verification Run the **show running-config** command to display the configurations.

5.119 import map(EVPN VNI)

Use this command to configure the route map for importing the remote EVPN routes to the local VNI instance. Use the **no** form of this command to delete the route map for importing the remote EVPN routes to the local VNI instance. Use the **default** form of this command to restore the default settings.

import map *routemap-name*

no import map

default import map

Parameter Description	**Parameter**	**Description**
	routemap-name	Name of the route map

Defaults No route map is configured for importing the remote EVPN routes to the local VNI instance by default.

Command Mode EVPN VNI configuration mode.

Default Level 14

Usage Guide This command is used to filter the remote EVPN routes to be imported to the local VNI instance, or modify the attribute of the remote EVPN routes imported to the local VNI instance.

This command supports only one route map, and the old configuration is overwritten by the new configuration.

Configuration Examples The following example configures the route map map1 for importing the remote EVPN routes to the local VNI instance vni 1.

```
Ruijie(config)# evpn
Ruijie(config-evpn)# vni 1
Ruijie(config-evpn-vni)# import map map1
```

Verification Run the **show running-config** command to display the configurations.

5.120 import path selection

Use this command to configure the route import policy. Use the **no** form of this command to delete the route import policy. Use the **default** form of this command to restore the default settings.

import path selection { **all** | **bestpath** | **multipath** }

no import path selection

default import path selection

Parameter	**Parameter**	**Description**

Description

all	Imports all routes with next hops.
bestpath	Imports routes with preferred next hops. By default, only routes with preferred next hops are imported.
multipath	Imports routes with preferred and equivalent next hops.

Defaults Only routes with preferred next hops are imported by default.

Command Mode BGP configuration mode, BGP IPv4 Unicast/VRF address family configuration mode, BGP IPv6 Unicast/VRF address family configuration mode, or BGP Scope configuration mode

Default Level 14

Usage Guide This command can be used to control inter-VRF route import, L3VPN remote routes import to VRF, and EVPN routes import to the IP route table.

Configuration Examples The following example imports routes with all next hops to the global IPv4 route table.

```
Ruijie(config)# router bgp 65530
Ruijie(config-router)# import path selection all
```

Verification Run the **show running-config** command to display the BGP configurations.

5.121 maximum-paths

Use this command to configure the number of equivalent paths of the EBGP/IBGP multipath load balancing function. Use the **no** form of this command to disable the EBGP/IBGP multipath load balancing function. Use the **default** form of this command to restore the default settings.

maximum-paths { **ebgp** | **ibgp** } *number*

no maximum-paths { **ebgp** | **ibgp** }

default maximum-paths { **ebgp** | **ibgp** }

Parameter Description

Parameter	Description
ebgp	Specifies the number of equivalent paths of the EBGP multipath load balancing function.
ibgp	Specifies the number of equivalent paths of the IBGP multipath load balancing function.
number	Indicates the maximum number of equivalent paths. The minimum value is **1**, and the maximum value depends on the device capability. If the value is **1**, the EBGP multipath load balancing function is disabled.

Defaults Equivalence of multiple BGP paths is not supported by default.

Command Mode BGP configuration mode, BGP IPv4 Unicast address family configuration mode, BGP IPv6 Unicast address family configuration mode, BGP Scope configuration mode

Default Level 14

Usage Guide The **maximum-paths ebgp** command is also used to configure equivalence of confederation EBGP multiple paths and local inter-VRF import routes.

⚠ IBGP and EBGP routes cannot form equivalent routes.

Configuration Examples The following example configures EBGP load balancing and sets the maximum number of equivalent routes to 2.

```
Ruijie(config)# router bgp 65530
Ruijie(config-router)# maximum-paths ebgp 2
```

Verification Run the **show running-config** command to display the BGP configurations.

5.122 maximum-prefix

Use this command to limit the maximum number of prefixes in the routing database in the address family. Use the **no** form of this command to restore the default setting.

maximum-prefix *maximum*

no maximum-prefix

Parameter Description

Parameter	Description
maximum	The maximum number of prefixes in the routing database in the address family, in the range from 1 to 4294967295

Defaults The default maximum numbers of prefixes in the routing database are not limited.

Command Mode BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode, BGP VPNv4/VPNv6 address family configuration mode, BGP Scope configuration mode or BGP L2VPN VPWS/VPLS/EVPN address family configuration mode

Usage Guide In a BGP address family, routing prefixes may be introduced through redistribution or learnt from neighbors, or other VRFs. Once routing prefixes in the BGP address family reaches the maximum number, this address family will enter to the overflow state.
Use the **show bgp** { *addressfamily* | **all** } **summary** command to display the state of routing database.
It is necessary to reconfigure BGP for state clearing, or use the **clear bgp** { *addressfamily* | **all** } * command to reset the address family.

When the address family is overflow as the number of prefixes reaches the maximum number, you can adjust maximum-prefix.

IPv4 unicast routes can receive the routing prefix in the following conditions even in the Overflow state:

The route information of the same routing prefix exists in the address database.

One route that overwrites this prefix (except for the default route) exists in the address database and the next-hop of this route is different from that of the newly received routing prefix.

Configuration Examples

The following example sets the maximum number of prefixes in the BGP routing database in the ipv4 multicast address family.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family ipv4 multicast
Ruijie(config-router-af)# maximum-prefix 65535
```

Related Commands

Command	Description
clear bgp all	Resets BGP's all address families.
clear bgp ipv4 mdt	Resets BGP's ipv4 mdt address families.
clear bgp ipv4 unicast	Resets BGP's ipv4 unicast address families.
clear bgp ipv6 unicast	Resets BGP's ipv6 unicast address families.
clear bgp vpnv4 unicast	Resets BGP's vpnv4 unicast address families.
show bgp all summary	Displays summary of BGP's all address families.
show bgp ipv4 mdt summary	Displays summary of BGP's ipv4 mdt address families.
show bgp ipv4 unicast summary	Displays summary of BGP's ipv4 unicast address families.
show bgp ipv6 unicast summary	Displays summary of BGP's ipv6 unicast address families.
show bgp vpnv4 summary	Displays summary of BGP's vpnv4 unicast address families.

Platform Description

N/A

5.123 neighbor activate

Use this command to activate the neighbor or peer group in the current address mode. Use the **no** form of this command to disable this function.

neighbor {*neighbor-address* | *peer-group-name*} **activate{ ipv4 | ipv6 }**

no neighbor {*neighbor-address* | *peer-group-name*} **activate{ ipv4 | ipv6 }**

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer, IPv4 address or IPv6 address
peer-group-name	Name of the peer group of up to 32 characters

ipv4	Activate only IPv4 neighbors in the peer group
Ipv6	Activate only IPv6 neighbors in the peer group

Defaults This function is enabled in IPv4 unicast address family mode by default.

Command Mode BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode, BGP VPNv4/VPNv6 address family configuration mode, BGP Scope configuration mode or BGP L2VPN VPWS/VPLS/EVPN address family configuration mode

Usage Guide The function is enabled by default for IPv4 address families. You need to set this command in other address-family configuration modes for exchanging routes.

Configuration Examples The following example activates the neighbor or peer group in the current address mode.

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 100
Ruijie(config-router)# address-family vpnv4
Ruijie(config-router-af)# neighbor 10.0.0.1 activate
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
neighbor remote-as	Configures the BGP peer.

Platform Description None

5.124 neighbor additional-paths

Use this command to enable add-path capability on the specified peer. Use the **no** or **default** form of this command to restore the default settings.

neighbor { *peer-address* | *peer-group-name* } **additional-paths** { **send** [**receive**] **| receive** }

no neighbor { *peer-address* | *peer-group-name* } **additional-paths** { **send** [**receive**] **| receive** }

default neighbor { *peer-address* | *peer-group-name* } **additional-paths** { **send** [**receive**] **| receive** }

Parameter Description

Parameter	Description
peer-address	IP address of the peer
peer-group-name	Name of the peer group
send	Enable the device to send the add-path route. Only when the peer enables the receive capability, the device can advertise the add-path route.
receive	Enable the device to receive the add-path route. Only when

	the peer enables the send capability, the device can receive the add-path route.

Defaults Add-path capability is disabled by default.

Command Mode BGP configuration mode, BGP IPv4/ IPv6 unicast address family configuration mode, BGP IPv4/ IPv6 VRF address family configuration mode or BGP Scope configuration mode.

Usage Guide

The command is only valid for IBGP neighbors.
BGP neighbors will be re-established after running this command.
Only when the local host is enaled to send the add-path route and the peer device is enable to receive the add-path route, the local host is allowed to advertise the add-path route.
If the BGP peer group is specified, all its members will inherit the command.

Configuration Examples

The following example sets the add-path publish capability with the neighbor 10.0.0.1.

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.0.0.1 additional-paths send
```

Related Commands

Command	Description

Platform Description None

5.125 neighbor advertise additional-paths

Use this command to advertise the add-path route to the peer. Use the **no** or **default** form of this command to restore the default settings.

neighbor { *peer-address* | *peer-group-name* } **advertise additional-paths** { **all** | **best** *number* | **ecmp** }

no neighbor { *peer-address* | *peer-group-name* **} advertise additional-paths**

default neighbor { *peer-address* | *peer-group-name* } **advertise additional-paths**

Parameter Description

Parameter	Description
peer-address	IP address of the peer
peer-group-name	Name of the peer group
all	Select all valid routes as the add-path alternative routes in the type of “all”
best *number*	Select the next-best routes as the add-path alternative routes in the type of “best number”. Range of *number*: 2-3.
ecmp	Select the ecmp routes as the add-path alternative routes in the type of “ecmp”. Additional configuration is needed to select the ecmp routes.

Defaults The add-path route is not allowed to be advertised by default.

Command Mode BGP configuration mode, BGP IPv4/ IPv6 unicast address family configuration mode, BGP IPv4/ IPv6 VRF address family configuration mode or BGP Scope configuration mode.

Usage Guide

The command is only valid for IBGP neighbors.
Run the **bgp additional-paths select** command to select the add-path routes of the specific type. If the type of selected add-path routes is different from that of advertised ones, then the add-path route is not advertised but only the optimal route is advertised.
Only when the local device is enaled to send the add-path route and the peer device is enable to receive the add-path route, the local device is allowed to advertise the add-path route.
If the BGP peer group is specified, all its members will inherit the command.

Configuration Examples

The following example configures the neighbor 10.0.0.1. If the requirement is met then advertise the next-best route as the add-path route.

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.0.0.1 advertise additional-paths best 2
```

Related Commands

Command	Description

Platform Description None

5.126 neighbor advertisement-interval

Use this command to set the time interval to send the BGP route update message. Use the **no** form of this command to restore the default setting.

neighbor {*neighbor-address* | *peer-group-name*} **advertisement-interval** *seconds*

no neighbor {*neighbor-address* | *peer-group-name*} **advertisement-interval**

Parameter Description

Parameter	Description
neighbor address	IP address of the peer
peer-group-name	Name of the peer group
seconds	Time interval to send the route update message in the range from 0 to 600 seconds

Defaults

IBGP connection: 15 seconds
EBGP connection: 30 seconds

Command BGP configuration mode/ BGP IPv4 VRF configuration mode/BGP IPv6 VRF address family

Mode configuration mode/BGP scope configuration mode

Usage Guide If you have specified the BGP peer group, all members of the peer group will adopt the settings of the command.

Configuration Examples The following example sets the time interval to send the BGP route update message.

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 100
Ruijie(config-router)# neighbor 10.0.0.1 advertisement-interval 10
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
neighbor remote-as	Configures the BGP peer.

Platform Description None

5.127 neighbor allowas-in

Use this command to allow the PE to receive messages with the same AS number as itself. Use the **no** form of this command to restore the default setting.

neighbor {*neighbor-address* | *peer-group-name*} **allowas-in** *number*

no neighbor {*neighbor-address* | *peer-group-name*} **allowas-in**

Parameter Description

Parameter	Description
neighboraddress	IP address of the peer
peer-group-name	Name of the peer group
number	Number of the AS number duplication in the range from 1 to 10, 3 by default

Defaults This function is disabled by default.

Command Mode BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode, BGP VPNv4/VPNv6 address family configuration mode, BGP Scope configuration mode or BGP L2VPN VPWS/VPLS/EVPN address family configuration mode

Usage Guide A typical application is spoke_hub mode. Execute this command on the PE to enable it to receive and then send the advertised address prefix. Configure two VRFs on the PE. One VRF receives the routes of all PEs and advertises them to the CE; the other VRF receives the routes advertised by the CE and advertises them to all PEs.
This command applies to IBGP or EBGP peers.

Configuration The following example allows the PE to receive messages with the same AS number as itself.

Examples

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.1.1.1 remote-as 100
Ruijie(config-router)# address-family ipv4 vrf vpn1
Ruijie(config-router-af)# neighbor 10.1.1.1 allowas-in
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
neighbor remote-as	Configures the BGP peer.

Platform Description

None

5.128 neighbor as-loop-check

Use this command to enable outbound loop detection for a BGP neighbor. Use the **no** or **default** form of this command to restore the default settings.

neighbor { *neighbor-address* | *peer-group-name* } **as-loop-check out**

no neighbor { *neighbor-address* | *peer-group-name* } **as-loop-check out**

default neighbor { *neighbor-address* | *peer-group-name* } **as-loop-check out**

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer.
peer-group-name	Name of the peer group.

Defaults

The function is disabled by default.

Command Mode

BGP configuration mode/ BGP IPv4 VRF address family configuration mode/ BGP IPv6 VRF address family configuration mode/BGP scope configuration mode

Usage Guide

If you enable this function, when the **AS Path** attribute carried in a BGP route contains the local AS number, BGP filters out the BGP route.
If a BGP peer group is specified, this function will automatically apply to all the member of the group.

Configuration Examples

The following example creates a neighbor on BGP IPv4 VRF configuration mode, and enables outbound loop detection for the BGP neighbor.

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# address-family ipv4 vrf vpn1
Ruijie(config-router-af)# neighbor 10.0.0.1 remote-as 100
Ruijie(config-router-af)# neighbor 10.0.0.1 as-loop-check out
```

Platform Description

N/A

5.129 neighbor as-originate-interval

Use this command to configure the interval that the device advertises local original BGP routes to the peer (group). Use the **no** or **default** form of this command to restore the default setting.

neighbor { *neighbor-address* | *peer-group-name* } **as-origination-interval** *seconds*

no neighbor { *neighbor-address* | *peer-group-name* } **as-origination-interval**

default neighbor { *neighbor-address* | *peer-group-name* } **as-origination-interval**

Parameter Description

Parameter	Description
neighboraddress	IP address of the peer.
peer-group-name	Name of the peer group
seconds	The interval at which the device advertises local original BGP routes to the peer (group), in the range from 1 to 65535 in the unit of seconds.

Defaults The default interval is 1.

Command Mode BGP configuration mode/ BGP IPv4 VRF address family configuration mode/ BGP IPv6 VRF address family configuration mode/BGP scope configuration mode

Usage Guide If you specify a peer group name in this command, the configuration takes effect on all members of the peer group.

Configuration Examples The following example configures the interval at which the device advertises local original BGP routes to the peer in the BGP IPv4 VRF address family configuration mode.

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# address-family ipv4 vrf vpn1
Ruijie(config-router-af)# neighbor 10.0.0.1 remote-as 100
Ruijie(config-router-af)# neighbor 10.0.0.1 as-origination-interval 10
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.130 neighbor as-override

Use this command to allow the PE to override the AS number of a site. Use the **no** form of this command to restore the default setting.

neighbor {*neighbor-address* | *peer-group-name*} **as-override**

no neighbor {*neighbor-address* | *peer-group-name*} **as-override**

Parameter Description

Parameter	Description
neighboraddress	IP address of the peer
peer-group-name	Name of the peer group

Defaults This function is disabled by default.

Command Mode BGP IPv4 VRF address family configuration mode/ BGP IPv6 VRF address family configuration mode/BGP scope configuration mode

Usage Guide

In general, BGP will not receive the messages with the same AS number as the autonomous area. This command can override the AS number, so that BGP can receive the messages with the same AS number.

A typical application is in a VPN where two CEs have the same AS number. Usually the CEs cannot receive messages from each other. Executing this command on a PE will override the AS number of one CE it connects. As a result, the other CE can receive the peer's route messages.

This command applies only to EBGP peers.

Configuration Examples

The following example allows the PE to override the AS number of a site.

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.1.1.1 remote-as 100
Ruijie(config-router)# address-family ipv4 vrf vpn1
Ruijie(config-router-af)# neighbor 10.1.1.1 as-override
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
neighbor remote-as	Configures the BGP peer.

Platform Description None

5.131 neighbor bmp-active

Use this command to enable the monitor of neighbor by specified BMP server. Use the **no** form of this command to disable the monitor of neighbor by specified BMP server. Use the **default** form of this command to restore the default settings.

neighbor { *neighbor-address* | *peer-group-name* } **bmp-active { all | server** *server-number* **[** *server-number* **[** *server-number* **]] }**

no neighbor { *neighbor-address* | *peer-group-name* } **bmp-active { all | server** *server-number* **[** *server-number* **[** *server-number* **]] }**

default neighbor { *neighbor-address* | *peer-group-name* } **bmp-active { all | server** *server-number* **[** *server-number* **[** *server-number* **]] }**

Parameter Description

Parameter	Description
neighbor-address	Specifies the peer address. It may be an IPv4 or IPv6 address.
peer-group-name	Specifies the name of the peer group
all	Specifies all BMP servers.
server-number	Specifies the example number of BMP server. Range: 1-8.

Defaults Neighbor is not monitored by default.

Command Mode BGP configuration mode, BGP IPv4/IPv6 VRF address family configuration mode or BGP Scope configuration mode

Default Level 14

Usage Guide Neighbor is not monitored by BMP server without the corresponding configuration.

Configuration Examples

1: Create the neighbor in the BGP configuration mode, and specify the neighbor to be monitored by all BMP servers.

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 100
Ruijie(config-router)# neighbor 10.0.0.1 bmp-active all
```

Verification Run the **show running-config** command to check the BGP configuration.

Notes

1: An error occurs when the neighbor is not activated in this address family
% Activate the neighbor for the address family first
1. An error occurs if the member of the peer group is configured.
% Invalid command for a peer-group member

5.132 neighbor default-fast-withdraw

Use this command to allow the BGP speaker to fast withdraw the default route to the peer (group). Use the **no** or **restore** form of this command to restore the default settings.

neighbor { *neighbor-address* | *peer-group-name* } **default-fast-withdraw**

no neighbor { *neighbor-address* | *peer-group-name* } **default-fast-withdraw**

default neighbor { *neighbor-address* | *peer-group-name* } **default-fast-withdraw**

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer
peer-group-name	Name of the peer group

Defaults This function is disabled by default.

Command Mode BGP configuration mode; BGP IPv4 Unicast/VRF address family configuration mode; BGP IPv6 Unicast/VRF address family configuration mode; BGP scope configuration mode

Usage Guide After this function is enabled, if the preferred routes and the equivalent routes function of the default route cannot take effect, the news will be informed to the neighbor first, and then other preferred routes will be selected. If you set the command for a member in the peer, this command will overwrite the settings on the peer group.

Configuration Examples The following example allows the BGP speaker to fast withdraw the default route to the peer (group) 10.1.1.1.

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.1.1.1 remote-as 80
Ruijie(config-router)# neighbor 10.1.1.1 default-fast-withdraw
```

Platform Description N/A

5.133 neighbor default-originate

Use this command to allow the BGP speaker to advertise the default route to the peer (group). Use the **no** form of this command to restore the default setting.

neighbor {*neighbor-address* | *peer-group-name*} **default-originate** [**route-map** *map-tag*]

no neighbor {*neighbor-address* | *peer-group-name*} **default-originate** [**route-map** *map-tag*]

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer
peer-group-name	Name of the peer group
map-tag	Name of the route-map of up to 32 characters

Defaults This function is disabled by default.

Command Mode BGP configuration mode, BGP Unicast/IPv4 VRF address family configuration mode, BGP Unicast/IPv6 VRF address family configuration mode, BGP scope configuration mode

Usage Guide This command does not require the default route in the routing table, but sends a default route whose next-hop is the local address to its neighbors.

If you have specified the BGP peer group, all members of the peer group will adopt the settings of the command. If you set the command for a member in the peer, this command will overwrite the settings on the peer group.

Configuration Examples

The following example allows the BGP speaker to advertise the default route to the peer (group).

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.1.1.1 remote-as 80
Ruijie(config-router)# neighbor 10.1.1.1 default-originate
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
neighbor remote-as	Configures the BGP peer.

Platform Description

None

5.134 neighbor description

Use this command to set a descriptive sentence for the specified peer (group). Use the **no** form of this command to restore the default setting.

neighbor {*neighbor-address* | *peer-group-name*} **description** *text*

no neighbor {*neighbor-address* | *peer-group-name*} **description**

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer
peer-group-name	Name of the peer group of up to 32 characters
text	Descriptive text of the peer (group) of up to 80 characters

Defaults

This function is disabled by default.

Command Mode

BGP configuration mode, BGP Unicast/IPv4 VRF address family configuration mode, BGP Unicast /IPv6 VRF address family configuration mode, BGP scope configuration mode

Usage Guide

This command is used to add descriptive characters for the peer (group). This may help remember features and characteristics of the peer (group).

Configuration Examples

The following example sets a descriptive sentence for the specified peer (group).

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.1.1.1 remote-as 80
Ruijie(config-router)# neighbor 10.1.1.1 description xyz.com
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
neighbor remote-as	Configures the BGP peer.

Platform Description None

5.135 neighbor distribute-list

Use this command to implement the routing policy based on the ACL when receiving/sending route information from/to the specified BGP peer. Use the **no** form of this command to restore the default setting.

neighbor { *neighbor-address* | *peer-group-name* } **distribute-list** { *access-list-number* } { **in** | **out** }

no neighbor { *neighbor-address* | *peer-group-name* } **distribute-list** { *access-list-number* } { **in** | **out** }

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer
peer-group-name	Name of the peer group
access-list-number	ACL number
in	Specifies the ACL for filtering the incoming routes.
out	Specifies the ACL for filtering the outgoing routes.

Defaults This function is disabled by default.

Command Mode BGP configuration mode, BGP Unicast/IPv4 VRF address family configuration mode, BGP Unicast /IPv6 VRF address family configuration mode, BGP scope configuration mode

Usage Guide

For in rule or out rule, this command cannot be used together with the **neighbor prefix-list** command. Only one of them can take effect.
If you have specified the BGP peer group, all members of the peer group will adopt the settings. If you set the **neighbor distribute-list** command for a member in the peer, this command will overwrite the settings on the peer group.
You can set different filtering policies in different address-family configuration modes to control routes.

Configuration Examples

The following example implements the routing policy based on the ACL when receiving/sending route information from/to the specified BGP peer.

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.1.1.1 remote-as 80
Ruijie(config-router)# neighbor 10.1.1.1
distribute-list bgp-filter in
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
neighbor remote-as	Configures the BGP peer.
ip access-list	Creates a standard IP ACL or extended IP ACL.

Platform Description None

5.136 neighbor ebgp-multihop

Use this command to configure the TTL of peer (groups). Use the **no** or **default** form of this command to restore the default settings.

neighbor {*neighbor-address* | *peer-group-name*} **ebgp-multihop** [*ttl*]

no neighbor {*neighbor-address* | *peer-group-name*} **ebgp-multihop** [*ttl*]

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer
peer-group-name	Name of the peer group
ttl	Maximum hops in the range 1 to 255

Defaults The TTL of the peer is the default one (255 for IBGP neighbor and 1 for EBGP neighbor).
If "ebgp-multihop" is followed by no parameter, the ttl is 255

Command Mode BGP configuration mode IPv4 VRF address family configuration mode/ IPv6 VRF address family configuration mode/BGP scope configuration mode

Usage Guide To prevent routing loop and dampening, non-default routes that can reach the peer must exist between EBGP peers between which the BGP connection can only be established via multiple hops.
If the BGP peer group is specified, all members of the peer group adopt the settings. If this command is set for a member of the peer, the setting will overwrite the setting for the group.

Configuration Examples The following example allows establishing BGP connection between EBGP peers that are not directly connected.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 65100
Ruijie(config-router)# neighbor 10.0.0.1 ebgp-multihop
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
neighbor remote-as	Configures the BGP peer.

Platform Description None

5.137 neighbor fall-over bfd

Use this command to enable BFD correlation with BGP. Use the **no** form or **default** form of this command to disable BFD correlation with BGP.

neighbor { *neighbor-address* | *peer-group-name* } **fall-over bfd**

no neighbor { *neighbor-address* | *peer-group-name* } **fall-over bfd**

default neighbor { *neighbor-address* | *peer-group-name* } **fall-over bfd**

Parameter Description

Parameter	Description
neighbor-address	IPv4 or IPv6 address of the peer.
peer-group-name	Name of the peer group

Defaults BFD correlation is disabled by default.

Command Mode BGP configuration mode / IPv4 VRF address family configuration mode/ IPv6 VRF address family configuration mode/BGP scope configuration mode

Usage Guide Before configuring BFD correlation, the BFD session parameters of the neighbor interface must be configured.

Configuration Examples The following example enables BFD correlation to detect the forwarding path between local and the neighbor 172.16.0.2.

```
Ruijie(config)# router bgp 45000
Ruijie(config-router)# neighbor 172.16.0.2 remote-as 45001
Ruijie(config-router)# neighbor 172.16.0.2 fall-over bfd
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
neighbor remote-as	Configures the BGP peer.

Platform Description None

5.138 neighbor filter-list

Use this command to enable route filtering when sending/receiving routing information to/from BGP peers. Use the **no** form of this command to restore the default setting.

neighbor { *neighbor-address* | *peer-group-name* } **filter-list** *access-list-number* { **in** | **out** }

no neighbor { *neighbor-address* | *peer-group-name* } **filter-list** *access-list-number* { **in** | **out** }

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer, IPv4 address or IPv6 address
peer-group-name	Name of the peer group

access-list-number	ACL number
in	Applies as-path list on the received routing information.
out	Applies as-path list on the distributed routing information.

Defaults The function is disabled by default.

Command Mode BGP configuration mode, BGP Unicast/IPv4 VRF address family configuration mode, BGP Unicast /IPv6 VRF address family configuration mode, BGP VPNv4/VPNv6 address family configuration m ode, BGP scope configuration mode

Usage Guide If the BGP peer group is specified, all members of the peer group adopt the settings of this command. If the **neighbor filter-list** command is set for a member of the peer, the setting will overwrite the setting for the group.
You can set different filter policies in different address-family configuration modes to control routes.

Configuration Examples The following example enables route filtering when sending/receiving routing information to/from BGP peers.

```
Ruijie(config)# ip as-path access-list 1 deny _123_
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 65100
Ruijie(config-router)# neighbor 10.0.0.1 filter-list 1 out
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
neighbor remote-as	Configures the BGP peer.
ip as-path access-list	Creates an AS_PATH list.
match as-path	Matches the AS_PATH list.

Platform Description None

5.139 neighbor global-nexthop-replace-local

Use this command to replace the global address with link-local address when sending IPv6 routings to the BGP IPv6 link-local peer (group). Use the **no** or **default** form of this command to restore the default settings.

neighbor { *neighbor-address* | *peer-group-name* } **global-nexthop-replace-local**

no neighbor { *neighbor-address* | *peer-group-name* } **global-nexthop-replace-local**

default neighbor { *neighbor-address* | *peer-group-name* } **global-nexthop-replace-local**

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer
peer-group-name	Name of the peer group

Defaults The function is disabled by default.

Command Mode BGP IPv6 Unicast/VRF address family configuration mode, BGP Scope configuration mode.

Usage Guide When sending IPv6 routings to the BGP IPv6 link-local peer (group), two next-hop addresses are sent by default: one is global address and the other is link-local address. Run this command to replace the global address with link local address.
Not effective on non-link-local neighbor.

Configuration Examples The following example replaces the global address with link-local address when advertising routings to peer FE80::1.

```
Ruijie(config)#router bgp 65000
Ruijie(config-router)#address-family ipv6
Ruijie(config-router-af)#neighbor FE80::1%vlan101 remote-as 1
Ruijie(config-router-af)#neighbor FE80::1%vlan101
global-nexthop-replace-local
```

Related Commands

Command	Description

Platform Description None

5.140 neighbor ha-mode

Use this command to enable the NSR function for a BGP peer. Use the **no** or **default** form of this command to restore the default settings.

neighbor { *neighbor-address* | *peer-group-name* } **ha-mode nsr**

no neighbor { *neighbor-address* | *peer-group-name* } **ha-mode nsr**

default neighbor { *neighbor-address* | *peer-group-name* } **ha-mode nsr**

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer, IPv4 address or IPv6 address
peer-group-name	Name of the peer group
ha-mode	Indicates the high availability mode and supports NSR function only.
nsr	Enables the NSR function.

Defaults By default, it is disabled.

Command Mode BGP configuration mode; BGP IPv4 VRF configuration mode; BGP IPv6 VRF configuration mode;

Usage Guide None-Stop-Routing (NSR) is used to ensure uninterrupted routes during protocol restart upon a switchover between the active and standby management boards. Currently, only the IPv4/IPv6 unicast address family and the L2VPN EVPN address family support the NSR function. If a neighbor activates other address families except the unicast address family, NSR switchovers cannot be performed.

Configuration Examples The following example enables NSR function for the BGP peer 10.0.0.1.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 65100
Ruijie(config-router)# neighbor 10.0.0.1 ha-mode nsr
```

Platform Description N/A

5.141 neighbor local-as

Use this command to configure the local AS number for the BGP peer, which could be used as its Remote AS to connect with local router. Use the **no** form of this command to restore the default setting.

neighbor {*neighbor-address* | *peer-group-name*} **local-as** *as-number* [**no-prepend** [**replace-as** [**dual-as**]]]

no neighbor {*neighbor-address* | *peer-group-name*} **local-as**

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer, IPv4 address or IPv6 address
peer-group-name	Name of the peer group
as-number	Local AS number, in the range from 1 to 65535. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new AS notation range is from 1 to 4294967295, represented as from 1 to 65535.65535 in dot mode.
no-prepend	The AS-PATH of the routing information received from the peer does not depend on the Local AS. This option is disabled by default.
replace-as	The AS-PATH of the routing information sent to the peer replaces the BGP AS with the Local AS. This option is disabled by default.
dual-as	Uses BGP AS or Local AS to establish BGP connection with the device. This option is disabled by default.

Defaults No Local AS is configured for the peer. If Local AS is configured, no options is configured by default. The peer could only use Local AS to establish BGP connection with local device, and adds

Local AS into the AS-PATH of the received routing information, inserts Local AS to the corresponding AS-PATH before sending the routing information to the peer.

Command Mode BGP configuration mode, IPv6 VRF address family configuration mode, IPv4 VRF address family configuration mode, BGP scope configuration mode

Usage Guide Local AS could be configured on the EBGP peer only, and if the attributes of the peer change, such as EBGP converts to IBGP or union EBGP, Local AS and corresponding options will be deleted. Local AS must be different from BGP AS and this peer's Remote AS and the union ID (if federation is configured). If you have specified the BGP peer group, all members of this peer group will adopt the settings of this command. You cannot set Local AS for the specified member of the peer group separately.

Configuration Examples The following example configures the local AS number for the BGP peer.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 65100
Ruijie(config-router)# neighbor 10.0.0.1 local-as 23
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
neighbor remote-as	Configures the BGP peer.

Platform Description N/A

5.142 neighbor maximum-prefix

Use this command to limit the number of prefixes received from the specified BGP peer. Use the **no** form of this command to restore the default setting.

neighbor { *neighbor-address* | *peer-group-name* } **maximum-prefix** *maximum* [*threshold*] { [**restart-time** *time*] | [**warning-only** [**suppress**]] }

no neighbor {*neighbor-address* | *peer-group-name*} **maximum-prefix** *maximum*

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer, IPv4 or IPv6 address
peer-group-name	Name of the peer group
maximum	Upper limit of the number of the received route entries
threshold	Percentage of the maximum when alarming.
restart-time	The specific time for the neighbor to restore state machine automatically after prefixes exceeds the limit and the device enters idle state
time	Specify the time for the neighbor to restore state machine
warning-only	Does not terminate the BGP connection when the route entries reach the upper limit but produce a log entry.

suppress	Stop learning when the route entries reach the upper limit.

Defaults This function is disabled by default.

Command Mode BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode, BGP VPNv4/VPNv6/L2VPN VPWS/VPLS/EVPN address family configuration mode or BGP Scope configuration mode.

Usage Guide The BGP connection will be torn down when the received routes exceeds the upper limit by default. To prevent tearing down the connection, set the "warning-only" to control that. To stop learning when the received routes exceed the upper limit, set the “suppress”. If there are entries exceeding the upper limit, as the order of route learning may be different, the newly learned entries may also be different.
If the BGP peer group is specified, all members of the peer group adopt the settings of this command. If this command is set for a member of the peer, the setting will overwrite the setting for the group.

Configuration Examples The following example limits the number of prefixes received from the specified BGP peer.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 maximum-prefix 1000
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
neighbor remote-as	Configures the BGP peer.

Platform Description None

5.143 neighbor next-hop-self

Use this command to set the next-hop of the route to the local BGP speaker while specifying the routes that the BGP peer redistributes. Use the **no** form of this command to restore the default setting.

neighbor {*neighbor-address* | *peer-group-name*} **next-hop-self**

no neighbor {*neighbor-address* | *peer-group-name*} **next-hop-self**

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer, IPv4 or IPv6 address
peer-group-name	Name of the peer group

Defaults This function is disabled by default.

Command Mode BGP configuration mode, BGP Unicast/IPv4 VRF address family configuration mode, BGP Unicast /IPv6 VRF address family configuration mode, BGP VPNv4/VPNv6 address family configuration mode, BGP scope configuration mode

Usage Guide

This command is mostly used in the non-full-mesh-type network, such as the Frame Relay and X.25, where the BGP speakers within the same subnet cannot completely be accessed mutually. If you have specified the BGP peer group, all members of the peer group will adopt the settings of the command.

Configuration Examples

The following example sets the next-hop of the route to the local BGP speaker.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 next-hop-self
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
neighbor remote-as	Configures the BGP peer.

Platform Description

None

5.144 neighbor next-hop-unchanged

Use this command to maintain the next-hop when sending routes to the peer(group). Use the **no** form of this command to restore the default setting.

neighbor {*neighbor-address* | *peer-group-name*} **next-hop-unchanged**

no neighbor {*neighbor-address* | *peer-group-name*} **next-hop-unchanged**

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer, IPv4 or IPv6 address
peer-group-name	Name of the peer group
next-hop-unchanged	Maintains the next-hop while sending the routes to the peer(group).

Defaults

The next-hop will be changed by default when routes are sent to the EBGP peer.

Command Mode

BGP configuration mode, BGP Unicast/IPv4 VRF address family configuration mode, BGP Unicast /IPv6 VRF address family configuration mode, BGP VPNv4/VPNv6 address family configuration m ode, BGP scope configuration mode

Usage Guide

This command is used to control to maintain the next-hop route transmitting between multi-hop EBGP peer sessions. This command cannot be configured on the route reflector. And for the client of the route reflector, if this function is enabled, the **neighbor next-hop-self** command cannot be used to change the next-hop of routes. This function is mainly applied to the cross-domain VPN. In the implementation with the Option C adopted, to reduce the complete connectivity between the PEs of the cross-domain CPN, a route reflector can be set in every autonomous domain to establish the Multihop MP-EBGP connection to implement the VPN route interaction. As the next-hop route is changed as itself while sending routes to the EBGP peer by default, PE stations of

other autonomous domains will consider the final next-hop of the VPN route as the route reflector when receiving the VPN route at last, which will result in all cross-domains VPN flow going through the reflector. However, usually this is not the optimal forwarding path, and the requirement for the forwarding performance of the RR is higher. To avoid this condition, use the **neighbor next-hop-unchanged** command in the address-family VPNv4 configuration mode to maintain the next-hop of the VPNv4 route sent to the BGP peer when establishing the cross-domain Multihop MP-EBGP connection on the router reflector.

Configuration Examples

The following example maintains the next-hop when sending routes to the peer (group).

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# address-family vpnv4
Ruijie(config-router-af)# neighbor 10.1.1.1 next-hop-unchanged
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
neighbor remote-as	Configures the BGP peer.

Platform Description

None

5.145 neighbor password

When the BGP connection with the BGP peer is established, use this command to enable TCP MD5 authentication and set the password. Use the **no** form of this command to restore the default setting.

neighbor {*neighbor-address* | *peer-group-name*} **password** [**0** | **7**]*string*

no neighbor {*neighbor-address* | *peer-group-name*} **password**

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer, IPv4 or IPv6 address
peer-group-name	Name of the peer group
0	Displays the password with encryption.
7	Displays the password without encryption.
string	Password for MD5 authentication in the range from up to 80 characters

Defaults

The function is disabled by default

Command Mode

BGP configuration mod, IPv4 VRF address family configuration mode, IPv6 VRF address family configuration mode, BGP scope configuration mode

Usage Guide

This command will enable MD5 authentication of the TCP. BGP peers must have the same password configured; otherwise, the neighbor relationship cannot be established. When this command is set, the local BGP speaker will re-establish the BGP connection with the BGP peer. If the BGP peer group is specified, all members of the peer group adopt the settings of this

command. If this command is set for a member of the peer, the setting will overwrite the setting for the group.

No matter in which mode, a neighbor has only one password, not one for every address family, .

Configuration Examples

The following example enables TCP MD5 authentication and sets the password.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 password Red-Giant
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol
neighbor remote-as	Configures the BGP peer.

Platform Description

None

5.146 neighbor peer-group (creating)

Use this command to create a BGP peer group. Use the **no** form of this command to restore the default setting.

neighbor *peer-group-name* **peer-group**

no neighbor *peer-group-name* **peer-group**

Parameter Description

Parameter	Description
peer-group-name	Name of the peer group

Defaults

No BGP peer group is created.

Command Mode

BGP configuration mode/ BGP IPv4 VRF configuration mode/ BGP IPv6 VRF address family configuration mode/ BGP scope configuration mode

Usage Guide

If multiple BGP peers use the same update policy, the peers can be configured in the same peer group, so as to simplify the configuration and boost operation efficiency.

Configuration Examples

The following example creates a BGP peer group.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor Red-Giant peer-group
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
neighbor remote-as	Configures the BGP peer.
neighbor peer-group (assigning members)	Configures the specified peer as the member of the BGP peer group.
show ip bgp peer-group	Displays the information of the BGP peer.

Platform Description None

5.147 neighbor peer-group (assigning members)

Use this command to configure the specified peer as a member of the BGP peer group. Use the **no** form of this command to restore the default setting.

neighbor *neighbor-address* **peer-group** *peer-group-name*

no neighbor *neighbor-address* **peer-group** *peer-group-name*

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer, IPv4 or IPv6 address
peer-group-name	Name of the peer group

Defaults No peer exists in the peer group.

Command Mode BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode, BGP VPNv4/VPNv6 address family configuration mode, BGP Scope configuration mode or BGP L2VPN VPWS/VPLS/EVPN address family configuration mode

Usage Guide

Members of the peer group can adopt all configurations of the peer.
It is allowed to configure an individual member of the peer group to replace the universal configuration for the peer group, but such separate configuration does not contain the configuration information that may affect the output update. In other words, every member in the peer group will always adopt the following configurations of the peer group:
remote-as, update-source, local-as, reconnect-interval, times, advertisement-interval, default-originate, next-hop-self, remove-private-as, send-community, distribute-list out, filter-list out, prefix-list out, route-map out, unsuppress-map, route-reflector-client.

Do not place neighbors of different address families in the same peer group, or place IBGP and EBGP neighbors in the same peer group.

Configuration Examples

The following example configures the specified peer as a member of the BGP peer group.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor Red-Giant peer-group
Ruijie(config-router)# neighbor 10.0.0.1 peer-group Red-Giant
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
neighbor remote-as	Configures the BGP peer.
neighbor peer-group (creating)	Creates the BGP peer group.

show ip bgp peer-group	Displays the information of the BGP peer.

Platform Description None

5.148 neighbor pic-disable

Use this command to disable the private PIC process when distributing or receiving routes to/from specified BGP peer. Use the **no** or **default** form of this command to restore the default settings.

neighbor { *neighbor-address* | *peer-group-name* } **pic-disable**

no neighbor { *neighbor-address* | *peer-group-name* } **pic-disable**

default neighbor { *neighbor-address* | *peer-group-name* } **pic-disable**

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer, IPv4 or IPv6 address
peer-group-name	Name of the peer group

Defaults This function is disabled by default.

Command Mode BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode or BGP Scope configuration mode.

Usage Guide The extended community attributes whose type is CF and sub type is E1 are used as the extended community attributes of private PIC process. Since other vendors may use the same attributes, the private PIC process should be disabled.

Configuration Examples The following example disable the private PIC process for peer 10.0.0.1.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 pic-disable
Ruijie(config-router)#
```

Related Commands

Command	Description
show running-config	Check BGP configuration

Platform Description None

5.149 neighbor prefix-list

Use this command to implement the routing policy based on the prefix list to receive/transmit routes from/to the BGP peer. Use the **no** form of this command to restore the default setting.

neighbor {*neighbor-address* | *peer-group-name*} **prefix-list** *prefix-list-name* {**in** | **out**}

no neighbor {*neighbor-address* | *peer-group-name*} **prefix-list** *prefix-list-name* {**in** | **out**}

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer, IPv4 or IPv6 address
peer-group-name	Name of the peer group
prefix-lis-name	Name of the prefix-list of up to 32 characters
in	Applies the prefix list to the received routes.
out	Applies the prefix list to the redistributed routes.

Defaults

This function is disabled by default.

Command Mode

BGP configuration mode, BGP Unicast/IPv4 VRF address family configuration mode, BGP Unicast /IPv6 VRF address family configuration mode, BGP VPNv4/VPNv6 address family configuration m ode, BGP scope configuration mode

Usage Guide

For the "in" rule or "out" rule, this command cannot be used together with the **neighbor distribute-list** command. That is, only one of them takes effect.
If the BGP peer group is specified, all members of the peer group adopt the settings of this command. If the **neighbor prefix-list in** command is set for a member of the peer, the setting will overwrite the setting for the group.
You can set different filter policies in different address-family configuration modes to control routes.

Configuration Examples

The following example implements the routing policy based on the prefix list to receive/transmit routes from/to the BGP peer.

```
Ruijie(config)# ip prefix-list bgp-filter deny 10.0.0.1/16
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 prefix-list bgp-filter in
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
neighbor remote-as	Configures the BGP peer.
ip prefix-list	Creates the prefix lists.

Platform Description

None

5.150 neighbor remote-as

Use this command to configure the BGP peer (group). Use the **no** form of this command to restore the default setting.

neighbor { *neighbor-address* | *peer-group-name* } **remote-as** { *as-number* | **route-map** *map-tag* }

no neighbor { *neighbor-address* | *peer-group-name* } **remote-as**

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer, IPv4 or IPv6 address
peer-group-name	Name of the peer group
as-number	BGP peer (group) autonomous system number in the range from 1 to 65535 In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new AS notation range is from 1 to 4294967295, represented as from 1 to 65535.65535 in dot mode.
route-map *map-tag*	Specifies the routing policy when connecting to the network segment neighbor.

Defaults No BGP peer is configured.

Command Mode BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode, BGP VPNv4/VPNv6 address family configuration mode, BGP Scope configuration mode or BGP L2VPN VPWS/VPLS/EVPN address family configuration mode

Usage Guide If you have specified the BGP peer group, all members of the peer group will inherit the settings of the command.
The command **neighbor** *neighbor-address* **remote-as route-map** *map-tag* is only run to configure the network segment neighbor. The specified routing policy can only allow neighbors whose routing policy matches the AS number to establish a connection. If the routing policy does not match, the neighbor cannot be established.

Configuration Examples The following example configures the BGP peer (group).

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 80
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.

Platform Description None

5.151 neighbor remove-private-as

Use this command to delete the private AS number recorded in the AS path attribute in the route sent to the specified EBGP peer. Use the **no** form of this command to restore the default setting.

neighbor { *neighbor-address*| *peer-group-name* } **remove-private-as** [**force** [**ignore-remote-as**]] [**replace-as**]**no neighbor** {*neighbor-address* | *peer-group-name*} **remove-private-as**

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer, IPv4 or IPv6 address
peer-group-name	Name of the peer group
force	Deletes the private AS number
ignore-remote-as	Ignore the AS number of private neighbor
replace-as	Replaces the private AS number with the local AS number

Defaults

This function is disabled by default.

Command Mode

BGP configuration mode, IPv4 address family configuration mode, IPv6 address family configuration mode, IPv4 VRF address family configuration mode, IPv6 VRF address family configuration mode

Usage Guide

This command takes effect only to EBGP peers.

The AS number ranges from **1** to **4294967295**, and the private AS number ranges from **64512** to **65534** and **4200000000** to **4294967294**, which is used in specific private applications. In normal cases, you can configure this command to prevent the private AS number being disclosed to a public network.

By default, the private AS number recorded in the AS path attribute of a route is not deleted in the following scenarios:

The AS path attribute contains both private and public AS numbers.

The private AS number recorded in the AS path attribute is the AS number of the EBGP peer to be sent, to prevent a loop.

By configuring **force**, you can forcibly delete the private AS number in the preceding two scenarios.

By configuring **force ignore-remote-as**, you can ignore the AS number of the neighbor when forcibly deleting the private AS number.

By configuring **replace-as**, you can replace the private AS number with the local AS number, preventing incorrect route selection due to a short AS path.

Configuration Examples

The following example deletes the private AS number recorded in the AS path attribute in the route sent to the specified EBGP peer

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 remove-private-as
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.

neighbor remote-as	Configures the BGP peer.

Platform Description None

5.152 neighbor route-map

Use this command to enable route match for the received/sent routes. Use the **no** form of this command to disable this function.

neighbor { *neighbor-address* | *peer-group-name* } **route-map** *map-tag* {**in** | **out**}

no neighbor { *neighbor-address* | *peer-group-name* } **route-map** *map-tag* {**in** | **out**}

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer, IPv4 or IPv6 address
peer-group-name	Name of the peer group
map-tag	Name of the match rule
in	Applies the rule to the incoming routes.
out	Applies the rule to the outgoing routes.

Defaults N/A

Command Mode BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode, BGP VPNv4/VPNv6 address family configuration mode, BGP Scope configuration mode or BGP L2VPN VPWS/VPLS/EVPN address family configuration mode

Usage Guide This command can be used to filter the incoming and outgoing routes for different neighbors by using different incoming/outgoing rules, purifying and controlling routes.
You can set different filter policies in different address-family configuration modes to control routes.

Configuration Examples The following example enables route match for the received/sent routes.

```
Ruijie(config-router)# neighbor 10.0.0.1 route-map map-tag in
```

Related Commands

Command	Description
neighbor soft-reconfiguration inbound	Stores the routing information sent from the BGP peer.
show ip bgp	Displays the BGP route entry.

Platform Description None

5.153 neighbor route-reflector-client

Use this command to configure the local device as the route reflector and specifies its client. Use the **no** form of this command to restore the default setting.

neighbor { *neighbor-address* | *peer-group-name* } **route-reflector-client**

no neighbor { *neighbor-address* | *peer-group-name* } **route-reflector-client**

default neighbor { *neighbor-address* | *peer-group-name* } **route-reflector-client**

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer, IPv4 or IPv6 address
peer-group-name	Name of the peer. The name cannot exceed 32 characters.

Defaults This function is disabled by default.

Command Mode BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode, BGP VPNv4/VPNv6 address family configuration mode, BGP Scope configuration mode or BGP L2VPN VPWS/VPLS/EVPN address family configuration mode

Usage Guide By default, all IBGP speakers in the autonomous system must establish neighbor relationship with each other. The BGP speaker does not forward the routes learned from an IBGP peer to other IBGP peers to avoid route loop.
This command can be used to set route reflector, so that there is no need for all IBGP speakers to establish full neighboring relationship between each other. This will allow the route reflector to forward learned IBGP routes to other IBGP peers.

Configuration Examples The following example configures the local device as the route reflector and specifies its client.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 route-reflector-client
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
neighbor remote-as	Configures the BGP peer.
bgp cluster-id	Configures the cluster ID of the route reflectors.
bgp client-to-client reflection	Enables the route reflection between clients

Platform Description None

5.154 neighbor router-mac-self

When distributing routes to the specified BGP peer, use this command to configure the router MAC attribute of EVPN routing information to the router MAC address or anycast MAC address of the local device. When distributing routes to the specified BGP peer, use the **no** form of this command to configure the router MAC attribute according to the default behavior Use the **default** form of this command to restore the default settings.

neighbor { *neighbor-address* | *peer-group-name* } **router-mac-self**
no neighbor { *neighbor-address* | *peer-group-name* } **router-mac-self**
default neighbor { *neighbor-address* | *peer-group-name* } **router-mac-self**

Parameter Description

Parameter	Description
neighbor-address	IPv4 or IPv6 address of the peer
peer-group-name	Name of the peer group, containing no more than 32 characters.

Defaults This function is disabled by default. The router MAC attribute of EVPN routes is not modified during the distribution process.

Command Mode BGP L2VPN EVPN address family configuration mode

Default Level 14

Usage Guide This command is used to modify the router MAC attribute of EVPN routes in the EVPN VXLAN scenario across data centers.

When the device is configured as an anycast gateway, the router MAC attribute is set to the anycast MAC address. Otherwise, the router MAC attribute is set to the router MAC address of the local device.

This command takes effect only when the VNI of EVPN routes has a corresponding VNI instance on the local device.

Configuration Examples The following example configures the router MAC attribute when advertising EVPN routes to the peer 10.0.0.1.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family l2vpn evpn
Ruijie(config-router-af)# neighbor 10.0.0.1 router-mac-self
```

Verification Run the **show running-config** command to display the BGP configurations.

Prompts 1. The following error information is displayed if the neighbor is not activated in the address family.

```
% Activate the neighbor for the address family first
```

2. The following error information is displayed if the neighbor is a peer group member.

```
% Invalid command for a peer-group member
```

3. The following error information is displayed if the next hop is configured to be unchanged for the peer or peer group.

```
% Cannot co-exist with next-hop-unchanged, Deconfigure first
```

5.155 neighbor send-community

Use this command to transmit community attributes to the specified BGP neighbor. Use the **no** form of this command to restore the default setting.

neighbor {*neighbor-address* | *peer-group-name*} **send-community** [**both** | **standard** | **extended**]

no neighbor {*neighbor-address* | *peer-group-name*} **send-community** [**both** | **standard** | **extended**]

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer, IPv4 or IPv6 address
peer-group-name	Name of the peer group
both	Transmits both standard and extended communities.
standard	Transmits the standard community only.
extended	Transmits the extended community only.

Defaults This function is disabled by default.

Command Mode BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode, BGP VPNv4/VPNv6 address family configuration mode, BGP Scope configuration mode or BGP L2VPN VPWS/VPLS/EVPN address family configuration mode

Usage Guide This command transmits the community to the neighbor or neighbor group.

Configuration Examples The following example transmits community attributes to the specified BGP neighbor.

```
Ruijie(config-router)# neighbor 10.1.1.1 send-community both
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
neighbor remote-as	Configures the BGP peer.
ip community-list	Creates the community list.

Platform Description None

5.156 neighbor send-mapping-only

Use this command to send only mapping entries to a specified neighbor. Use the **no** or **default** form of this command to restore the default settings.

neighbor { *neighbor-address* | *peer-group-name* } **send-mapping-only**

no neighbor { *neighbor-address* | *peer-group-name* } **send-mapping-only**

default neighbor { *neighbor-address* | *peer-group-name* } **send-mapping-only**

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer, IPv4 or IPv6 address
peer-group-name	Name of the peer group of up to 32 characters

Defaults This function is disabled by default.

Command Mode BGP L2VPN EVPN address family configuration mode

Usage Guide This command is used to send only mapping entries to a specified neighbor.

Configuration Examples

The following example send only mapping entries to 57.50.1.1.

```
Ruijie(config)# router bgp 65530
Ruijie(config-router)# neighbor 57.50.1.1 remote-as 65531
Ruijie(config-router)# address-family l2vpn evpn
Ruijie(config-router-af)# neighbor 57.50.1.1 activate
Ruijie(config-router-af)# neighbor 57.50.1.1 send-mapping-only
```

Platform Description None

5.157 neighbor shutdown

Use this command to disconnect the BGP connection established with the specified BGP peer. Use the **no** or **default** form of this command to restore the default settings.

neighbor { *neighbor-address* | *peer-group-name* } **shutdown**

no neighbor { *neighbor-address* | *peer-group-name* } **shutdown**

default neighbor { *neighbor-address* | *peer-group-name* } **shutdown**

Use this command to gracefully disconnect the BGP connection established with the specified BGP peer.

neighbor { *neighbor-address* | *peer-group-name* } **shutdown graceful** [**community** *value*] [**delay** *time*]

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer, IPv4 or IPv6 address
peer-group-name	Name of the peer group
graceful	Shuts down BGP connection gracefully.
community *value*	Indicates the community value carried in the route sent to the neighbor.
delay *time*	Indicates the delay time (in seconds) for shutting down BGP connections. The value range is from 1 to 65,535.

Defaults This function is disabled by default.

Command Mode BGP configuration mode, BGP IPv4/IPv6 VRF address family configuration mode or BGP Scope configuration mode.

Usage Guide This command is used to disconnect valid connection established with the specified peer (group), and delete all associated routing information. However, this command still keeps the configuration information of that specified peer (group).
If the BGP peer group is specified, all members of the peer group adopt the settings of this command. If this command is set for a member of the peer, the settings will overwrite the settings for the group.

Configuration Examples The following example disconnects the BGP connection established with the specified BGP peer.

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.0.0.1 shutdown
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
neighbor remote-as	Configures the BGP peer.
show ip bgp summary	Displays the BGP connection status.

Platform Description None

5.158 neighbor soft-reconfiguration inbound

Use this command to store the routing information sent from the BGP peer. Use the **no** or **default** form of this command to restore the default settings.

neighbor { *neighbor-address* | *peer-group-name* } **soft-reconfiguration inbound**

no neighbor { *neighbor-address* | *peer-group-name* } **soft-reconfiguration inbound**

default neighbor { *neighbor-address* | *peer-group-name* } **soft-reconfiguration inbound**

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer, IPv4 or IPv6 address
peer-group-name	Name of the peer group

Defaults This function is disabled by default.

Command Mode BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode, BGP VPNv4/VPNv6 address family configuration mode, BGP Scope configuration mode or BGP L2VPN VPWS/VPLS/EVPN address family configuration mode

Usage Guide This command restarts the BGP session, and keeps the unchanged routing information sent from the BGP peer (group).
Executing this command will consume more memories. If both parties support the route refresh function, this command becomes unnecessary. You may run the **show ip bgp neighbors** command to judge whether the peer can support the route refresh function.
If the BGP peer group is specified, all members of the peer group adopt the settings of this command. If this command is set for a member of the peer, the settings will overwrite the settings for the group.

Configuration Examples The following example stores the routing information sent from the BGP peer.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 soft-reconfiguration inbound
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
neighbor remote-as	Configures the BGP peer.
show ip bgp neighbors	Displays the information of the BGP peer.
clear ip bgp	Resets the BGP peer session.

Platform Description None

5.159 neighbor soo

Use this command to set the SOO value of the neighbor. Use the **no** or **default** form of this command to restore the default settings.

neighbor {*neighbor-address* | *peer-group-name*} **soo** *soo-value*

no neighbor {*neighbor-address* | *peer-group-name*} **soo**

default neighbor { *neighbor-address* | *peer-group-name* } **soo**

Parameter

Parameter	Description

Description

neighbor-address	IP address of the peer, IPv4 or IPv6 address
peer-group-name	Name of the peer group
soo-value	SOO value There are two forms of soo_value: (1)soo_value = as_num:nn as_number:nn: as_number is the public AS number and nn is defined by yourself. The range is from 0 to 4294967295. (2)soo_value = ip_addr:nn ip_address:nn: IP address must be global and nnis defined by yourself. The range is from 0 to 65535. (3)soo_value = as4_num:nn as4_num is the public AS number (4 byte) and nn is defined by yourself, which ranges from 0 to 65535.

Defaults This function is disabled by default.

Command Mode BGP IPv4/IPv6 VRF address family configuration mode or BGP Scope VRF configuration mode.

Usage Guide In CE dual-home mode, execute this command to prevent routes sent by CE to PEs from being sent back to CE.

Configuration Examples

The following example sets the SOO value of the neighbor.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 100
Ruijie(config-router)# address-family ipv4 vrf vpn1
Ruijie(config-router)# neighbor 10.0.0.1 soo 100:100
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
timers bgp	Configures the keepalive and holdtime values globally.

Platform Description None

5.160 neighbor timers

In specifying BGP peer to establish the BGP connection, use this command to set the keepalive and holdtime time values used for establishing the BGP connection. Use the **no** or **default** form of this command to restore the default settings.

neighbor { *neighbor-address* | *peer-group-name* } **timers** { *keepalive holdtime* [*minimum-holdtime*] | **connect** *connect-retry* }

no neighbor { *neighbor-address* | *peer-group-name* } **timers** [**connect**]

default neighbor { *neighbor-address* | *peer-group-name* } **timers** [**connect**]

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer, IPv4 or IPv6 address
neighbor-prefix	IPv4 or IPv6 address segment of the peer
peer-group-name	Name of the peer group
keepalive	Time interval to send the KEEPALIVE message to the BGP peer. Range: 0-65535 seconds
holdtime	Time interval to consider the BGP peer alive Range: 0-65535 seconds
minimum-holdtime	Allows a minimum holdtime value of neighbor advertisement. It is unrestricted when the value is 0. The range is 0 to 65535 seconds.
connect-retry	The value of the connect-retry timer is 15s.

Defaults

keepalive: 60 seconds
holdtime: 180 seconds
minimum-holdtime: 0 seconds
connect-retry: 15 seconds

Command Mode

BGP configuration mode, BGP IPv4 VRF address family configuration mode, BGP IPv6 VRF address family configuration mode, BGP Scope configuration mode

Usage Guide

A proper keepalive value must not exceed one-third of the holdtime value.
If the time is configured for an individual peer or a peer group, that peer or peer-group will use its time to replace the global time configuration and connect the peer.
If the BGP peer group is specified, all members of the peer group adopt the settings of this command. If this command is set for a member of the peer, the settings will overwrite the settings for the group.

Configuration Examples

The following example sets the keepalive and holdtime time values used for establishing the BGP connection.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 80 240
```

The following example sets the connect-retry time values used for establishing the BGP connection.

```
Ruijie(config)# router bgp 65000

Ruijie(config-router)# neighbor 10.0.0.1 timers connect 100
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
timers bgp	Sets the keepalive and holdtime values globally.

Platform Description None

5.161 neighbor track

Use this command to configure association between BGP and TRACK to check the status of track instance and reduce the BGP convergence time. Use the **no** or **restore** form of this command to restore the default settings.

neighbor { *neighbor-address* | *peer-group-name* } **track** *track-obj-number*

no neighbor { *neighbor-address* | *peer-group-name* } **track**

default neighbor { *neighbor-address* | *peer-group-name* } **track**

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer
peer-group-name	Name of the peer group of up to 32 characters
track-obj-number	Specifies the number of the tracked object.

Defaults This function is disabled by default.

Command Mode BGP configuration mode; BGP IPv4 VRF configuration mode; BGP IPv6 VRF configuration mode; and BGP scope configuration mode

Usage Guide Please make sure that the corresponding TRACK session parameters have been configured.

Configuration Examples The following example associates BGP and TRACK 1.

```
Ruijie(config)# router bgp 45000
Ruijie(config-router)# neighbor 172.16.0.2 remote-as 45001
Ruijie(config-router)# neighbor 172.16.0.2 track 1
```

Platform Description None

5.162 neighbor transport connection-mode

Use this command to configure the connection establishment mode of a BGP neighbor. Use the **no** or **default** form of this command to restore the default settings.

neighbor { *neighbor-address* | *peer-group-name* } **transport connection-mode** { **active-only** | **both** | **passive-only** }

no neighbor { *neighbor-address* | *peer-group-name* } **transport connection-mode**

default neighbor { *neighbor-address* | *peer-group-name* } **transport connection-mode**

Parameter Description

Parameter	Description
neighbor-address	IPv4 or IPv6 address of the peer
peer-group-name	Peer group name
active-only	Specifies that a BGP neighbor can only actively establish connections.
both	Specifies that a BGP neighbor can actively and passively establish connections.
passive-only	Specifies that a BGP neighbor can only passively establish connections.

Defaults A BGP neighbor can actively and passively establish connections by default.

Command Mode BGP configuration mode, BGP IPv4 VRF configuration mode, BGP IPv6 VRF configuration mode, and BGP Scope configuration mode

Default Level 14

Usage Guide Two devices serving as peers cannot configure **actively-only** or **passive-only** at the same time.
A network segment neighbor can only be connected passively, and its connection mode is not controlled by this command.

Configuration Examples The following example configures that BGP peer 10.0.0.1 can only actively establish connections.

```
Ruijie(config)# router bgp 45000
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 45001
Ruijie(config-router)# neighbor 10.0.0.1 transport connection-mode active-only
```

Verification Run the **show running-config** command to display the BGP configurations.

5.163 neighbor unsuppress-map

Use this command to selectively advertise routing information suppressed by aggregate-address command. Use the **no** form of this command to restore the default setting.

neighbor {*neighbor-address* | *peer-group-name*} **unsuppress-map** *map-tag*

no neighbor {*neighbor-address* | *peer-group-name*} **unsuppress-map** *map-tag*

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer
peer-group-name	Name of the peer group
map-tag	Name of the route-map of up to 32 characters

Defaults This function is disabled by default.

Command BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IP

Mode v6 VRF address family configuration mode, BGP VPNv4/VPNv6 address family configuration mode, BGP Scope configuration mode or BGP L2VPN VPWS/VPLS/EVPN address family configuration mode

Usage Guide This command advertises the specified suppressed routes.
If the BGP peer group is specified, all members of the peer group adopt the settings of this command. If this command is set for a member of the peer, the setting will overwrite the setting for the group.

Configuration Examples The following example selectively advertises routing information suppressed by aggregate-address command.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 unsuppress-map
unspress-route
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
neighbor remote-as	Configures the BGP peer.
aggregate-address	Configures the aggregate address.
route-map	Configures the route-map

Platform Description None

5.164 neighbor update-delay

Use this command to configure the time of BGP delayed advertisement for first routes. Use the **no** or **restore** form of the command to restore the default settings.

neighbor { *neighbor-address* | *peer-group-name* } **update-delay** *time*

no neighbor { *neighbor-address* | *peer-group-name* } **update-delay**

default neighbor { *neighbor-address* | *peer-group-name* } **update-delay**

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer, IPv4 or IPv6 address
peer-group-name	Name of the peer group
time	Time of BGP delayed advertisement for first routes.

Defaults The function is disabled by default.

Command Mode BGP configuration mode/ BGP IPv4 VRF address family configuration mode/ BGP IPv6 VRF address family configuration mode/ BGP scope configuration mode

Usage After BGP starts, BGP peers negotiate to establish the neighborship before sending route

Guide information (update packets).An optimum route is calculated on the local end and sent to the peer end. By default, routes are advertised directly. After a neighbor receives a better route, it updates the route information to the peer. As a result, extra route advertisement occurs. **update-delay** can be configured to shorten the route information update time.
If the BGP peer group is specified, all members of the peer group adopt the settings of this command.

Configuration Examples

The following example sets the delayed time to 60s.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 update-delay 60
```

Platform Description N/A

5.165 neighbor update-source

Use this command to configure the interface for BGP connection of the IBGP peer..

neighbor { *neighbor-address*| *peer-group-name* } **update-source** {*interface-type interface-number* | *address* }Use the **no** form of the command to remove the source address configuration for the BGP peer.

no neighbor {*neighbor-address* | *peer-group-name*} **update-source**

Use the **default** form of the command to restore the default settings.

default neighbor { *neighbor-address* | *peer-group-name* } **update-source**

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer, IPv4 or IPv6 address
peer-group-name	Name of the peer group
interface-type interface-number	Interface name
address	The interface address which is used fro BGP connection. The address type (IPv4 or IPv6) must be same as that of the peer address.

Defaults The local interface is used as the egress interface by default.

Command Mode BGP configuration mode/ IPv4 VRF address family configuration mode/ IPv6 VRF address family configuration mode/ BGP scope configuration mode

Usage Guide You can use this command to enable the loopback interface to establish a BGP connection with the peer.
The interface address specified for BGP connection must be valid in local, otherwise the BGP

connection may be faulty.
All members in a BGP peer group inherit the settings of this command. Particularly, if the interface address is used, only the member whose address type is same as the interface address's can inherit the settings of this command.
If the IPv6 address of the loopback interface is used for neighbor connection, both peers need to be configured with the loopback interface. The BGP connection can be established only when the address of the egress interface on the peer is same as that of the neighbor in local.
A loopback interface address can be configured on different interfaces. You need to specify only the interface name,
The peer configured with the IPv6 address of loopback interface support only one-hop BGP neighbor connection.

Configuration Examples

The following example establishes the BGP connection.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 update-source lookback 1
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
neighbor remote-as	Configures the BGP peer.

Platform Description

None

5.166 neighbor version

Use this command to display the number of the BGP protocol version used by the specific BGP neighbor. Use the **no** form of this command to restore the default setting.

neighbor { *neighbor-address* | *peer-group-name* } **version** *number*

no neighbor { *neighbor-address* | *peer-group-name* } **version**

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer
peer-group-name	Name of the peer group
number	Version number

Defaults

The default version number is 4.

Command Mode

BGP configuration mode/ BGP IPv4 VRF address family configuration mode/ BGP IPv6 VRF address family configuration mode/ BGP scope configuration mode

Usage Guide

When the command is used, BGP will lose the version negotiation function.

Configuration

The following example displays the number of the BGP protocol version used by the specific BGP

Examples neighbor.

```
Ruijie(config-router)# neighbor 10.1.1.1 version 4
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
neighbor remote-as	Configures the BGP peer.

Platform Description None

5.167 neighbor weight

Use this command to set the weight for the specific neighbor. Use the **no** form of this command to restore the default setting.

neighbor {*neighbor-address*|*peer-group-name*} **weight** *number*

no neighbor {*neighbor-address*|*peer-group-name*} **weight**

Parameter Description

Parameter	Description
neighbor-address	IP address of the peer
peer-group-name	Name of the peer group
number	Weight, in the range from 0 to 65535.

Defaults No weight is configured for the specific neighbor by default. In this case, the learned route weight is 0 and the locally generated route's weight is 32768 initially.

Command Mode BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode, BGP VPNv4/VPNv6 address family configuration mode, BGP Scope configuration mode or BGP L2VPN VPWS/VPLS/EVPN address family configuration mode

Usage Guide When the command is used, routes learnt from the neighbor use this value as the initial weight value. The higher the weight, the higher the priority is.
Executing the **set weight** command in the route map of the neighbor will overwrite this value.

Configuration Examples The following example sets the weight for the specific neighbor.

```
Ruijie(config-router)# neighbor 10.1.1.1 weight 73
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
neighbor remote-as	Configures the BGP peer.

Platform Description None

5.168 network

Use this command to configure the network information to be advertised by the local BGP speaker. Use the **no** form of this command to restore the default setting.

network { *network-number* [**mask** *mask*] | *prefix* } [**route-map** *map-tag*] [**backdoor**]

no network *network-number* [**mask** *mask*] [**route-map** *map-tag*] [**backdoor**]

Parameter Description

Parameter	Description
network-number	Network number
mask	Subnet mask
prefix	Prefix address of the network segment
map-tag	Name of the route-map of up to 32 characters
backdoor	The route is a backdoor route.

Defaults No network information is specified by default.

Command Mode BGP configuration mode, BGP Unicast/IPv4 VRF address family configuration mode, BGP Unicast /IPv6 VRF address family configuration mode, BGP scope configuration mode

Usage Guide This command allows injecting the IGP route into the BGP routing table. The network information advertised can be direct route, static route and dynamic route.
The "route-map" can be used to modify the network information.

Configuration Examples The following example configures the network information to be advertised by the local BGP speaker.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# network 10.0.0.1 mask 255.255.0.0
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.
redistribute	Configures the route redistribution.
Network synchronization	Enables network synchronization.

Platform Description None

5.169 network synchronization

Use this command to advertise the network information after the local BGP speaker is synchronized with the local device. Use the **no** form of this command to directly advertise the network information.

network synchronization

no network synchronization

Parameter Description	Parameter	Description
	N/A	N/A

Defaults This function is enabled by default.

Command Mode BGP configuration mode, BGP Unicast/IPv4 VRF address family configuration mode, BGP Unicast /IPv6 VRF address family configuration mode, BGP scope configuration mode BGP configura configuration m

Usage Guide This command is used to modify the status of the network during the process of advertisement. It is not recommended to turn off this switch lest route black hole is caused.

Configuration Examples The following example advertises the network information after the local BGP speaker is synchronized with the local device.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# network synchronization
```

Related Commands	Command	Description
	router bgp	Enables the BGP protocol.
	redistribute	Configures the route redistribution.
	network(BGP)	Configures the route to be distributed.

Platform Description None

5.170 overflow memory-lack

Use this command to allow BGP to enter the OVERFLOW state when the memory is insufficient. Use the **no** form of this command to disable this function.

overflow memory-lack

no overflow memory-lack

Parameter Description	Parameter	Description
	N/A	N/A

Defaults Allow the BGP to enter the OVERFLOW state when the memory is insufficient.

Command Mode BGP configuration mode, BGP scope configuration mode

Usage Guide In the BGP OVERFLOW state, the newly-learned routes are discarded, which prevents the memory from increasing.
When this function is enabled, if the BGP address family is in the OVERFLOW state, the newly-learned routes will be discarded, which may result in network loop. To prevent this, BGP generates a default route directing to the NULL interface, and the default route will always exist in

the OVERFLOW state.

Use the **clear bgp** {*addressfamily*|**all**} * command to reset the BGP and clear the OVERFLOW state in the BGP address family.

Use the no option to disallow the BGP to enter the OVERFLOW state when the memory is insufficient, which may lead to the continuous exhaustion of the memory resources. When the memory has been exhausted to a certain degree, BGP will break down all neighbors and delete all learned routes.

Configuration Examples

The following example sets BGP not to enter the OVERFLOW configuration status when the memory is insufficient.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# no overflow memory-lack
```

Related Commands

Command	Description
clear bgp { *addressfamily*|**all } ***	Resets the BGP address family.
show bgp { *addressfamily*|**all } summary**	Displays the summary of the BGP address family.

Platform Description

None

5.171 rd

Use this command to configure a RD value for the EVI instance. Use the **no** or **restore** form of this command to restore the default settings.

rd { **auto** | *rd_value* }

no rd { auto | *rd_value* **}**

default rd

Parameter Description

Parameter	Description
auto	Generates the RD value automatically.
rd_value	Indicates value of the RD. There are 3 forms of rd_value: 1. rd_value = as_num:nn The as_num indicates the public AS number (2 bytes) and nn is customized. The range is from 0 to 4,294,967,295. 2. rd_value = ip_addr:nn The ip_add refers to the global IP address and nn is customized. The range is from 0 to 65,535. 3. rd_value = as4_num:nn The as4_num indicates the public AS number (2 bytes) and nn is customized. The range is from 0 to 65,535. The 4-byte AS notation range is from 1 to 4,294,967,295, represented

	as from 1 to 65535.65535 in dot mode.

Defaults The RD value is not configured by default.

Command Mode evpn-vni configuration mode

Usage Guide

If an EVI is configured with a RD value, the RD value cannot be revised. If you want to revise it, you can only delete the EVI first and then configure a new RD value for it. One EVI can be configured with one RD value only.

The RD format in 4-byte AS is **AS4:NN**. The **AS4** supports demical and dot mode. The range of **AS4** is from 1 to 4,294,967,295, represented as from 1 to 65535.65535 in dot mode. The range of **NN** is from 1 to 65,535.

For AS number in the range of 1 to 65,535, it will be saved in the format of 2-byte AS, because under this condition, the demical and dot mode AS are the same.

Configuration Examples

The following example sets RD for EVI 100. The value is 100 : 1.

```
Ruijie(config)# evpn
Ruijie(config-evpn)# vni 100
Ruijie(config-evpn-vni)# rd 100:1
```

The following example sets RD for EVI 200. The value is auto.

```
Ruijie(config)# evpn
Ruijie(config-evpn)# vni 200
Ruijie(config-evpn-vni)# rd auto
```

Platform Description N/A

5.172 redistribute

Use this to redistribute routes between the other routing protocol and the BGP. Use the **no** form of this command to restore the default setting.

redistribute *protocol-type* [**route-map** *map-tag*] [**metric** *metric-value*]

no redistribute *protocol-type* [**route-map** *map-tag*] [**metric**]

Parameter Description

Parameter	Description
protocol-type	Source protocol type of a redistributed route. The values include: ● connected ● static ● rip ● arp-host (host route converted by ARP)

	• nd-route (route converted by ND) • aggregate (aggregation route)
route-map *map-tag*	Specifies the route map. No route map is associated with by default.
metric *metric-value*	Sets the default metric of the routes to be redistributed, null by default.

Defaults This function is disabled by default.

Command Mode BGP configuration mode, IPv4 Unicast/VRF address family configuration mode, IPv6 Unicast/VRF address family configuration mode, BGP scope configuration mode

Usage Guide

When a switch supports multiple routing protocols, the coordination between these protocols becomes an important task. The switch may run multiple routing protocols at the same time, so it should redistribute a protocol's information to another protocol. This is applicable to all IP routing protocols.

When you configure the **no** form of this command with parameters, the corresponding parameter configuration will be removed. The no form removes redistribution without any parameters configured.

The route metric generated by the route-map command takes precedence over the one generated by the metric option of this command. If both are unavailable, the redistributed one is used.

Configuration Examples

The following example redistributes routes between the other routing protocol and the BGP.

```
Ruijie(config-router)# redistribute static route-map static-rmap
Ruijie(config-router)# no redistribute static
route-map static-rmap
Ruijie(config-router)# no redistribute static
```

Related Commands

Command	Description
show ip protocol	Displays the protocol configuration.

Platform Description None

5.173 redistribute ospf

Use this command to redistribute routes between OSPF and BGP. Use the **no** form of this command to restore the default setting.

redistribute ospf *process-id* [**route-map** *map-tag*] [**metric** *metric-value*] [**match internal external** [**1**|**2**] **nssa-external** [**1**|**2**]]

no redistribute ospf *process-id* [**route-map** *map-tag*] [**metric** *metric-value*] [**match internal external** [**1**|**2**] **nssa-external** [**1**|**2**]}]

Parameter Description

Parameter	Description
process-id	OSPF process ID to be redistributed
route-map *map-tag*	Specifies the route map. No route map is associated by default.
metric *metric-value*	Sets the default metric of the routes to be redistributed, null by default.
match	Matches the sub type of OSPF routes.
internal	Matches the internal OSPF routes, the default configuration.
external [1 | 2]	Matches the external OSPF routes. You can specify the concrete type (v1 or v2) or v1 and v2 without indication.
nssa- external [1 | 2]	Matches the NSSA-external type of OSPF routes. You can specify the concrete type (v1 or v2) or v1 and v2 without indication.

Defaults This function is disabled by default.

Command Mode BGP configuration mode, IPv4 Unicast/VRF address family configuration mode, IPv6 Unicast/VRF address family configuration mode, BGP scope configuration mode

Usage Guide

When a switch supports multiple routing protocols, the coordination between these protocols becomes an important task. The switch may run multiple routing protocols at the same time, so it should redistribute a protocol's information to another protocol.

When you configure the **no** form of this command with parameters, the corresponding parameter configuration will be removed. The **no** form removes redistribution without any parameters configured.

The filtering rule of OSPF routing: filtering the OSPF routing type according to the configured match option before filtering the route-map rule. The route metric generated by the **route-map** command takes precedence over the one generated by the metric option of this command. If both are not available, the redistributed one is used.

Configuration Examples

The following example redistributes routes between OSPF and BGP.

```
Ruijie(config-router)# redistribute ospf 2 route-map static-rmap
Ruijie(config-router)# no redistribute ospf 4 match external rotue-map ospf-rmap
Ruijie(config-router)# no redistribute ospf 78
```

Related Commands

Command	Description
show ip protocol	Displays the protocol configuration.

Platform Description None

5.174 redistribute isis

Use this command to redistribute routes between ISIS and BGP. Use the **no** form of this command to restore the default setting.

redistribute isis [*isis-tag*] [**route-map** *map-tag*] [**metric** *metric-value*] [**level-1** | **level-1-2** | **level-2**]

no redistribute isis [*isis-tag*] [**route-map** *map-tag*] [**metric**] [**level-1** | **level-1-2** | **level-2**]

Parameter Description

Parameter	Description
isis-tag	(Optional)ISIS process ID to be redistributed
route-map *map-tag*	Specifies the route map. No route map is associated by default.
metric *metric-value*	Sets the default metric of the routes to be redistributed, null by default.
level-1	Redistributes level-1 ISIS routes.
level-1-2	Redistributes level-1 and level-2 ISIS routes.
level-2	Redistributes level-2 ISIS routes.

Defaults This function is disabled by default.

Command Mode BGP configuration mode, IPv4 Unicast/VRF address family configuration mode, IPv6 Unicast/VRF address family configuration mode, BGP scope configuration mode

Usage Guide

When a switch supports multiple routing protocols, the coordination between these protocols becomes an important task. The switch may run multiple routing protocols at the same time, so it should redistribute a protocol's information to another protocol. This is applicable to all IP routing protocols.

When you configure the **no** form of this command with parameters, the corresponding parameter configuration will be removed. The **no** form removes redistribution without any parameters configured.

The filtering rule of ISIS routing is: filtering the ISIS routing type according to the configured level option before filtering the route-map rule. The route metric generated by the route-map command takes precedence over the one generated by the metric option of this command. If both are unavailable, the redistributed one is used.

Configuration Examples

The following example redistributes routes between ISIS and BGP.

```
Ruijie(config-router)# redistribute isis route-map static-rmap
Ruijie(config-router)# no redistribute isis test route-map isis-rmap
Ruijie(config-router)# no redistribute isis
```

Related Commands

Command	Description
show ip protocol	Displays the protocol configuration.

Platform None

Description

5.175 route mirroring

Use this command to enable the BGP packet mirroring function to send mirroring packets to the BMP server. Use the **no** form of this command to disable the BGP packet mirroring function. Use the **default** form of this command to restore the default settings.

route mirroring

no route mirroring

default route mirroring

Parameter Description

Parameter	Description
N/A	N/A

Defaults The BGP packet mirroring function is disabled by default.

Command Mode BMP configuration mode

Default Level 14

Usage Guide Mirroring BGP packets affect the BGP performance.

Configuration Examples The following example enables mirroring BGP packets to be sent to the BMP server.

```
Ruijie(config)#bmp server 1
Ruijie(config-bmpsrvr)#route mirroring
```

Verification Run the **show running-config** command to display the BGP configurations.

5.176 router bgp

Use this command to enable the BGP protocol, configure the local autonomous system number and enter BGP protocol configuration mode. Use the **no** form of this command to restore the default setting.

router bgp *as-number* [**instance** *instance-name*]

no router bgp *as-number*

Parameter Description

Parameter	Description
as-number	AS number in the range from 1 to 65535 In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new AS notation range is from 1 to 4294967295, represented as from 1 to 65535.65535 in dot mode.
instance	The instance name is required for the non-default instance.

instance-name	Instance name of 1 to 32 characters.

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide
This command is used to start the BGP protocol.
RFC4839 defines a new reserved AS notation 23456, which cannot be used. The original private AS notation in the range from 64512 to 65534 is still effective, 65535 is reserved for special purposes.
RFC 5398 also defines two groups of new reserved AS notation for documents, whose ranges are from 64496 to 64511 and from 65536 to 65551.

Configuration Examples The following example enables the BGP protocol.

```
Ruijie(config)# router bgp 65000
```

Related Commands

Command	Description
ip routing	Enables IP routing.
bgp router-id	Sets the ID of the device running the BGP protocol
network	Sets the network information to be advertised by the local BGP speaker.

Platform Description None

5.177 router bgp redistribute

Use this command to redistribute the route information of other protocols to mulitiple BGP instances. Use the **no** or **default** form of this command to restore the default settings.

router bgp redistribute [vrf *vrf-name* **] address-family { ipv4 unicast | ipv6 unicast }** *protocol-type* [**route-map** *map-tag*] [**metric** *metric-value*]

no router bgp redistribute [vrf *vrf-name* **] address-family { ipv4 unicast | ipv6 unicast }** *protocol-type*

default router bgp redistribute [vrf *vrf-name* **] address-family { ipv4 unicast | ipv6 unicast }** *protocol-type*

Parameter Description

Parameter	Description
protocol-type	The protocol types of redistributed routes: ● connected ● static ● rip ● isis

	• ospf • arp-host (host route converted by ARP) • nd-route (route converted by ND) • aggregate (aggregation route)
route-map *map-tag*	The name of route-map. No route-map is associated by default.
metric *metric-value*	The default metric value, range: 0-4294967295. No value is configured by default.

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide This command is used to redistribute the route information of other protocols to all BGP instances. If BGP instance has been configured with the redistribution command, the command of instance takes effect.

Configuration Examples The following example redistributes static routes in IPv4 unicast address family and filters redistributed routes by route map “static-rmap”.

```
Ruijie(config)#router bgp redistribute ipv4 unicast static route-map
static-rmap
```

Related Commands

Command	Description
N/A	

Platform Description None

5.178 route-target

Use this command to configure a RT (Route Target) for EVI. Use the **no** or **restore** form of this command to restore the default settings.

route-target { **import** | **export** | **both** } { **auto** | *rt_value*}

no route-target { **import** | **export** | **both** } { **auto** | *rt_value* }

default route-target { **import** | **export** | **both** } { **auto** | *rt_value* }

Parameter Description

Parameter	Description
auto	Generates the RD value automatically.
import	Sets the import RT value.
export	Sets the export RT value.
both	Sets the import and export RT value.
rt_value	Indicates value of the RT.

	There are 3 forms of rt_value: 1. rt_value = as_num:nn The as_num indicates the public AS number (2 bytes) and nn is customized. The range is from 0 to 4,294,967,295. 2. rt_value = ip_addr:nn The ip_add refers to the global IP address and nn is customized. The range is from 0 to 65,535. 3. rt_value = as4_num:nn The as4_num indicates the public AS number (2 bytes) and nn is customized. The range is from 0 to 65,535. The 4-byte AS notation range is from 1 to 4,294,967,295, represented as from 1 to 65535.65535 in dot mode.

Defaults The RT value is not configured by default.

Command Mode evpn-vni configuration mode

Usage Guide

One EVI can be configured with multiple import and export RT values.

- The format of auto RT is **AS2:NN**. The **AS2** is the AS number of 2B. If an AS number of 4B is configured, it will be split into two 2B AS number and then be put in the RT. The **nn** indicates value of **vni-id** and has a space of 4B.
- If the AS number of BGP changes, the auto RT will be changed, too.
- If the manually configured RT is coherent with the auto RT, both will be displayed. After the **auto** command is configured and the automatically generated RT value is 100 : 1, then if you delete value 100 : 1, only the value not the **auto** command will be deleted.

Configuration Examples

The following example sets RT for EVI 100. The values are import RT 100:1, 100:4, export RT 100:2, 100:4, and both auto.

```
Ruijie(config)# evpn
Ruijie(config-evpn)# vni 100
Ruijie(config-evpn-vni)# route-target import 100:1
Ruijie(config-evpn-vni)# route-target export 100:2
Ruijie(config-evpn-vni)# route-target both 100:4
Ruijie(config-evpn-vni)# route-target both auto
```

Platform Description N/A

5.179 scope

Use this command to enter the scope configuration mode and associate VRF with BGP. Use the **exit** command to exit the scope configuration mode. Use the **no** or **default** form of this command to remove the association between the VRF instance and BGP protocol.

scope { **global** | **vrf** *vrf-name* }

exit

no scope { **global** | **vrf** *vrf-name* }

default scope { **global** | **vrf** *vrf-name* }

Parameter Description

Parameter	Description
global	Global routing table.
vrf *vrf-name*	VRF instance name

Defaults

No scope address family is defined by default.

Command Mode

BGP configuration mode.

Usage Guide

Enter the scope configuration mode to perform the configuration.
To exit the scope configuration mode, use the **exit** command.

In the scope configuration mode, the commands configured in the BGP configuration mode are converted to the form in the scope configuration mode. To restore the commands, execute the command **no route bgp** and configure the commands again.

Configuration Examples

The following example enters the scope global configuration mode.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# scope global
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

5.180 show bgp all

Use this command to display all the address-families information of BGP route.

show bgp [**instance** *as-num*] **all** [**community** [*community-number* [**exact-match**]] | **filter-list** *path-list-number* | **community-list** *community-name* [**extact-match**] | **extcommunity-list** *extcommunity-name* | **regexp** *regexp* | **quote-regexp** *regexp* | **inconsistent-as**]

Display the route dampening parameter.

show bgp [**instance** *as-num*] **all dampening** { **flap-statistics** | **dampened-paths** | **parameters** }

Display the related information of the neighbors.

show bgp [**instance** *as-num*] **all neighbors** [*neighbor-address*] [**received-routes | routes | advertised-routes** | **policy** [**detail**]]

show bgp [**instance** *as-num*] **all summary**

Display the path information.

show bgp [**instance** *as-num*] **all paths**

Display the update-group information.

show bgp [**instance** *as-num*] **all update-group** [*neighbor-address* | *update-group-index*] [**summary**]

Parameter Description

Parameter	Description
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
community *community-number*	Displays the routing information including the specified community value. Community-number can be in the format of AA:NN (autonomous system number / 2-byte number), or the following pre-defined value: internet, no-export, local-as, no-advertise.
community-list *community-name*	Displays the BGP routing information matching the specified community-list.
exact-match	Routing information exactly matching the community value or community-list.
dampening dampened-paths	Displays the restrained routing information.
dampening flap-statistics	Displays the routing dampening statistics.
dampening parameters	Displays the routing dampening parameters.

extcommunity-list *extcommunity-name*	Displays the routing information including the specified extcommunity value.
filter-list *path-list-number*	Displays the routing information matching the filter-list.
inconsistent-as	Displays the routing information of the inconsistent source AS.
neighbors [*neighbor-address*]	Displays all the BGP neighbors' information. Displays information about a specific neighbor when *neighbor-address* or *neighbor-prefix* is specified; otherwise, displays information about all BGP neighbors.
neighbors *neighbor-address* **received-routes**	Displays all routing information received from the specified peer (including the accepted and refused route).
neighbors *neighbor-address* **routes**	Displays all the accepted routing information received from the peer.
neighbors *neighbor-address* **advertised-routes**	Displays all the routing information sent to the specified peer.
neighbors *neighbor-address* **policy**	Displays the related routing policy information of BGP neighbors. (General)
neighbors *neighbor-address* **policy detail**	Displays the related routing policy information of BGP neighbors. (Detail)
quote-regexp *regexp*	Displays the BGP routing information with the AS path attribute matching the specified regexp within the double quote marks.
regexp *regexp*	Displays the BGP routing information with the AS path attribute matching the specified regexp.
update-group [*neighbor-address* | *update-group-index*]	Displays update-group information. If *neighbor-address* is specified, display the update-group information of specific neighbor. If *update-group-index* is specified, display the specific update-group information.

Defaults Please refer to the detailed description of **show bgp ipv4 unicast** command.

Command Mode Privileged EXEC mode

Usage Please refer to the detailed description of **show bgp ipv4 unicast** command..

Guide

Configuration Examples None

Related Commands

Command	Description
show bgp ipv4 unicast	Displays the IPv4 unicast route information of BGP

Platform Description None

5.181 show bgp bmp

Use this command to display information about a BMP server instance.

show bgp bmp server [*server-number* [**detail**] | **detail**]

Use this command to display neighbors monitored by the BMP server.

show bgp bmp neighbor

Use this command to display abstract information of a connection to the BMP server.

show bgp bmp summary

Parameter Description

Parameter	Description
server-number	ID of a BMP server instance
detail	Displays information about a BMP server instance.

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide

Configuration Examples The following example displays information about a BMP server instance.

```
Ruijie#show bgp bmp server 1
BMP server 1
  BMP state = Idle
  up time       Never
  BGP monitor neighbors: 4
  route mirroring
```

The following example displays neighbors monitored by the BMP server.

```
Ruijie#show bgp bmp neighbor
```

```
Neighbor       CfgSvr#          ActSvr#
3.3.3.1        1                1
3.3.3.2        1                1
```

Field	Description
Neighbor	Address of a monitored neighbor
CfgSvr#	Configured instance ID of the BMP server that monitors the neighbor.
ActSvr#	Activated instance ID of the BMP server that monitors the neighbor.

The following example displays abstract information of a connection to the BMP server.

```
Ruijie#show bgp bmp summary
ID   Host               Port     State       Time       NBRs
1    123.123.123.123     12345    Active      Never      4
```

Field	Description
ID	Address of a monitored neighbor
Host	Configured instance ID of the BMP server that monitors the neighbor.
Port	Monitoring port of the BMP server
State	Status of the connection to the BMP server
Time	Duration for connecting to or disconnecting from the BMP server
NBRs	Quantity of neighbors monitored by the BMP server

5.182 show bgp ipv4 unicast

Use this command to display the IPv4 unicast route information of BGP.

show bgp [**instance** *as-num*] **ipv4 unicast** [**vrf** *vrf-name*] [*network* [*network-mask* [**longer-prefixes**]]]

show bgp [**instance** *as-num*] **ipv4 unicast** [**vrf** *vrf-name*] **community** [*community-number* [**exact-match**]]

show bgp [**instance** *as-num*] **ipv4 unicast** [**vrf** *vrf-name*] **community-list** *community-name* [**exact-match**]

show bgp [**instance** *as-num*] **ipv4 unicast** [**vrf** *vrf-name*] **extcommunity-list** *extcommunity-name*

show bgp [**instance** *as-num*] **ipv4 unicast [vrf** *vrf-name* **] dampening dampened-paths**

show bgp [**instance** *as-num*] **ipv4 unicast [vrf** *vrf-name* **] dampening flap-statistics**

show bgp [**instance** *as-num*] **ipv4 unicast [vrf** *vrf-name* **] filter-list** *path-list-number*

show bgp [**instance** *as-num*] **ipv4 unicast [vrf** *vrf-name* **] inconsistent-as**

show bgp [**instance** *as-num*] **ipv4 unicast [vrf** *vrf-name* **] prefix-list** *ip-prefix-list-name*

show bgp [**instance** *as-num*] **ipv4 unicast [vrf** *vrf-name* **] quote-regexp** *regexp*

show bgp [**instance** *as-num*] **ipv4 unicast [vrf** *vrf-name* **] regexp** *regexp*

show bgp [**instance** *as-num*] **ipv4 unicast[vrf** *vrf-name* **] route-map** *map-tag*

show bgp [**instance** *as-num*] **ipv4 unicast** [**vrf** *vrf-name*] **neighbors** [*neighbor-address*] [**received-routes | routes | advertised-routes** | **policy** [**detail**]]

show bgp [**instance** *as-num*] **ipv4 unicast [vrf** *vrf-name* **] cidr-only**

show bgp [**instance** *as-num*] **ipv4 unicast [vrf** *vrf-name* **] labels**

Parameter Description

Parameter	Description
vrf-name	VRF instance name
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
network	Displays the specific routing information in the routing table
network-mask	Displays the routing information included in the specified network.
longer-prefixes	Displays the route map information.
community *community-number*	Displays the routing information including the specified community value. Community-number can be in the format of AA:NN (autonomous system number / 2-byte number), or the following pre-defined value: internet, no-export, local-as, no-advertise.
community-list *community-name*	Displays the BGP routing information matching the specified community-list.
exact-match	Routing information exactly matching the community value or community-list.
extcommunity-list *extcommunity-name*	Displays the routing information including the specified extcommunity value.
dampening dampened-paths	Displays the restrained routing information.
dampening flap-statistics	Displays the routing dampening statistics.
filter-list *path-list-number*	Displays the routing information matching the filter-list.
inconsistent-as	Displays the routing information of the inconsistent source AS.
prefix-list *ip-prefix-list-name*	Displays the routing information matching the specified prefix-list.
quote-regexp *regexp*	Displays the BGP routing information with the AS path attribute

	matching the specified regexp within the double quote marks.
regexp *regexp*	Displays the BGP routing information with the AS path attribute matching the specified regexp.
route-map *map-tag*	Displays the routing information matching the specified route-map filtering condition.
neighbors [*neighbor-address*]	Displays the BGP IPv4 unicast neighbor information. Displays information about a specific neighbor when *neighbor-address* or *neighbor-prefix* is specified; otherwise, displays information about all BGP IPv4 neighbors.
neighbors *neighbor-address* **received-routes**	Displays all routing information received from the specified peer (including the accepted and refused route).
neighbors *neighbor-address* **routes**	Displays all the routing information received from the peer and accepted.
neighbors *neighbor-address* **advertised-routes**	Displays all the routing information sent to the specified peer.
neighbors *neighbor-address* **policy**	Displays the related routing policy information of BGP neighbors. (General)
neighbors *neighbor-address* **policy detail**	Displays the related routing policy information of BGP neighbors. (Detail)
cidr-only	Displays the routing information without the category.
labels	Displays the BGP-learnt and BGP-sent routes with the MPLS label.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Use this command to view the IPv4 unicast route information of BGP. You can filter the information with the specified parameter to display the matching route information.

Configuration Examples

The following example displays the IPv4 unicast route information of BGP.

```
Ruijie# show bgp ipv4 unicast
BGP table version is 2, local router ID is 192.168.183.1
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
   S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete
 Network   Next Hop   Metric  LocPrf Path
*>i44.0.0.0   192.168.195.183   0   100  i
*>i64.12.0.0/16  192.168.195.183   0   100  i
*>i172.16.0.0/24 192.168.195.183   0   100  i
*>i202.201.0.0  192.168.195.183   0   100  i
*>i202.201.1.0  192.168.195.183   0   100  i
*>i202.201.2.0  192.168.195.183   0   100  i
```

```
*>i202.201.3.0  192.168.195.183   0   100  i
*>i202.201.18.0  192.168.195.183   0   100  i
Total number of prefixes 8
Ruijie# show bgp ipv4 unicast community 11:2222
111:12345
BGP table version is 2, local router ID is 192.168.183.1
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
   S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete
 Network   Next Hop   Metric  LocPrf Path
*>i202.201.0.0  192.168.195.183   0   100  i
*>i202.201.1.0  192.168.195.183   0   100  i
*>i202.201.2.0  192.168.195.183   0   100  i
*>i202.201.3.0  192.168.195.183   0   100  i
Total number of prefixes 4
Ruijie(config)# ip as-path access-list 5 permit .*
Ruijie# show bgp ipv4 unicast filter-list 5
BGP table version is 2, local router ID is 192.168.183.1
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
   S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete
 Network   Next Hop   Metric  LocPrf Path
*>192.168.88.0  0.0.0.0    32768 ?
Total number of prefixes 1
Ruijie# show ip bgp cidr-only
BGP table version is 2, local router ID is 192.168.183.1
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
   S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete
 Network   Next Hop   Metric  LocPrf Path
*>i64.12.0.0/16  192.168.195.183   0   100  i
*>i172.16.0.0/24 192.168.195.183   0   100  i
Total number of prefixes 2
Ruijie# show bgp ipv4 unicast labels
Network   Next Hop   In Label/Out Label
1.1.1.1/32  192.167.1.1  17/18
1.1.1.2/32  192.167.1.1  nolabel/19
```

Field	Description
Network	Route prefix
Nexthop	Nexthop IP address of the route
In label	Label assigned by this router (if any).
Out label	Label learnt from the nexthop router (if any).

Related Commands	Command	Description
	show ip bgp	Displays the IPv4 unicast route information of BGP.

Platform Description None

5.183 show bgp ipv4 unicast dampening parameters

Use this command to display the IPv4 unicast route dampening parameters configured for the BGP.

show bgp [**instance** *as-num*] **ipv4 unicast [vrf** *vrf-name* **] dampening parameters**

Parameter Description

Parameter	Description
vrf-name	VRF name
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to display the IPv4 unicast route dampening parameters configured for BGP.

Configuration Examples

The following example displays the IPv4 unicast route dampening parameters configured for the BGP.

```
Ruijie(config-router)# bgp dampening 25 10000 10000 200
Ruijie# show bgp ipv4 unicast dampening parameters
dampening 25 10000 10000 200
Dampening Control Block(s):
Reachability Half-Life time : 25 min
Reuse penalty     : 10000
Suppress penalty    : 10000
Max suppress time   : 200 min
Max penalty (ceil)    : 29800000
Min penalty (floor)    : 5000
```

Related Commands N/A

Platform Description None

5.184 show bgp ipv4 unicast neighbors

Use this command to display the related information of BGP IPv4 unicast neighbor.

show bgp [**instance** *as-num*] **ipv4 unicast** [**vrf** *vrf-name*] **neighbors** neighbor-address [**policy** [**detail**]

Parameter Description

Parameter	Description
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
vrf-name	VRF instance name
neighbor-address	Neighbor IPv4 address
neighbors *neighbor-address* **policy**	Displays the general routing policy information of BGP neighbors.
neighbors *neighbor-address* **policy detail**	Displays the detailed routing policy information of BGP neighbors.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to view the information of the connection with BGP IPv4 unicast neighbor.

Configuration Examples

The following example displays the related information of BGP IPv4 unicast neighbor.

```
Ruijie# show bgp ipv4 unicast neighbors
BGP neighbor is 192.168.195.183, remote AS 23, local AS 23, internal link
 BGP version 4, remote router ID 44.0.0.1
 BGP state = Established, up for 00:06:37
 Last read 00:06:37, hold time is 180, keepalive interval is 60 seconds
 Neighbor capabilities:
 Route refresh: advertised and received (old and new)
Address family IPv4 Unicast: advertised and received
Graceful restart: advertised and received
Remote Restart timer is 120 seconds
 Received 14 messages, 0 notifications, 0 in queue
 open message:1 update message:4 keepalive message:9
```

```
 refresh message:0 dynamic cap:0 notifications:0
 Sent 12 messages, 0 notifications, 0 in queue
 open message:1 update message:3 keepalive message:8
 refresh message:0 dynamic cap:0 notifications:0
 Route refresh request: received 0, sent 0
 Minimum time between advertisement runs is 0 seconds
 For address family: IPv4 Unicast
 BGP table version 2, neighbor version 1
 Index 2, Offset 0, Mask 0x4
 Inbound soft reconfiguration allowed
 8 accepted prefixes
 0 announced prefixes
 Connections established 2; dropped 1
Local host: 192.168.195.239, Local port: 1074
Foreign host: 192.168.195.183, Foreign port: 179
Nexthop: 192.168.195.239
Nexthop global: ::
Nexthop local: ::
BGP connection: non shared network
Last Reset: 00:06:43, due to BGP Notification sent
Notification Error Message: (Cease/Unspecified Error Subcode)
Using BFD to detect fast fallover
```

Related Commands N/A

Platform Description None

5.185 show bgp ipv4 unicast paths

Use this command to display the path information of the IPv4 unicast in the route database.

show bgp [**instance** *as-num*] **ipv4 unicast [vrf** *vrf-name* **] paths**

Parameter Description

Parameter	Description
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
vrf-name	VRF instance name

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to view the path information in the route database.

Configuration Examples The following example displays the path information of the IPv4 unicast in the route database.

```
Ruijie# show bgp ipv4 unicast paths
Address  Refcnt Path
[0x1d7806a0:0] (67)
[0x1d7389a0:13] (20) 10
```

Related Commands N/A

Platform Description None

5.186 show bgp ipv4 unicast summary

Use this command to display the related information of BGP IPv4 unicast.

show bgp [**instance** *as-num*] **ipv4 unicast [vrf** *vrf-name* **] summary**

Parameter Description

Parameter	Description
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
vrf-name	VRF instance name

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to display the related information of BGP IPv4 unicast.

Configuration Examples The following example displays the related information of BGP IPv4 unicast.

```
Ruijie # show bgp ipv4 unicast summary
BGP router identifier 192.168.183.1, local AS number 23
```

```
BGP table version is 2
2 BGP AS-PATH entries
1 BGP community entries
Neighbor  V AS MsgRcvd MsgSent TblVer InQ OutQ Up/Down State/PfxRcd
192.168.195.79 4 24  0  0  0 0 0 never Active
192.168.195.183 4 23  17  15  1 0 0 00:09:04  8
Total number of neighbors 2
```

Related Commands	Command	Description
	router bgp	Enables the BGP protocol

Platform Description None

5.187 show bgp ipv4 unicast update-group

Use this command to display information about an update-group in the BGP IPv4 unicast address family.

show bgp ipv4 unicast [**vrf** *vrf-name*] **update-group** [*neighbor-address* | *update-group-index*] [**summary**]

Parameter Description

Parameter	Description
vrf-name	Specifies a VRF instance name.
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
neighbor-address	Specifies a neighbor that belongs to an update-group whose information needs to be displayed.
update-group-index	Specifies an update-group whose information needs to be displayed.
summary	Displays neighbor-related information.

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide This command is used to display information about an update-group in the BGP IPv4 unicast address family.

Configuration Example The following example displays information about an update-group in the BGP IPv4 unicast address family.

```
Ruijie#show bgp ipv4 update-group
BGP version 4 update-group 1(ref 2), internal, Address Family: IPv4 Unicast
```

```
 Update message formated 2, replicated 2
 Minimum route advertisement interval is 0 seconds
 Minimum AS origination interval is 1 seconds
 Format state: Current working
             Refresh blocked
 Has 1 members:
  192.168.195.183
```

The following example displays the neighbor summary of update-group 1 in the BGP IPv4 unicast address family.

```
Ruijie # show bgp ipv4 unicast update-group 1 summary
BGP router identifier 192.168.183.1, local AS number 23
BGP table version is 2
2 BGP AS-PATH entries
1 BGP community entries
Neighbor        V    AS   MsgRcvd  MsgSent  TblVer  InQ  OutQ  Up/Down
State/PfxRcd
192.168.195.79   4    24     0       0       0     0    0    never      Active
192.168.195.183  4    23     17      15      1     0    0    00:09:04    8
Total number of neighbors 2
```

Field description:

Field	Description
BGP router identifier	BGP router ID
local AS number	Local AS number of BGP
BGP table version	Version of the BGP routing table
BGP AS-PATH entries	Number of AS path entries
BGP community entries	Number of community attribute entries
Neighbor	Peer address
V	Protocol version
AS	Peer AS number
MsgRcvd	Number of received packets
MsgSent	Number of sent packets
State/PfxRcd	Status of the neighbor state machine or number of received routing entries

5.188 show bgp ipv6 unicast

Use this command to display the IPv6 unicast routing information of BGP.

show bgp ipv6 unicast [**vrf** *vrf-name*] [*IPv6-Prefix*]

show bgp ipv6 unicast [vrf *vrf-name*]community *community-number* [**exact-match**]

show bgp ipv6 unicast [vrf *vrf-name*]community-list *community-name* [**exact-match**]

show bgp ipv6 unicast [vrf *vrf-name*]dampening dampened-paths

show bgp ipv6 unicast [vrf *vrf-name*]dampening flap-statistics

show bgp ipv6 unicast [vrf *vrf-name*]filter-list *path-list-number*

show bgp ipv6 unicast [vrf *vrf-name*]inconsistent-as

show bgp ipv6 unicast [vrf *vrf-name*]prefix-list *ipv6-prefix-list-name*

show bgp ipv6 unicast [vrf *vrf-name*]quote-regexp *regexp*

show bgp ipv6 unicast [vrf *vrf-name*] regexp *regexp*

show bgp ipv6 unicast[vrf *vrf-name*] route-map *map-tag*

show bgp ipv6 unicast [**vrf** *vrf-name*] **neighbors** [*neighbor-address*] [**received-routes | routes | advertised-routes** | **policy** [**detail**]]

Parameter Description

Parameter	Description
vrf-name	VRF name
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
IPv6-prefix	Displays the IPv6 routing information included in the specified network. The input format of the routing information prefix is X:X:X:X::X/<0-128>.
community *community-number*	Displays the routing information including the specified community value. Community-number can be in the format of AA:NN (autonomous system number / 2-byte number), or the following pre-defined value: internet, no-export, local-as, no-advertise.
community-list *community-name*	Displays the BGP routing information matching the specified community-list.
exact-match	Routing information exactly matches the community value or community-list.
dampening dampened-paths	Displays the restrained routing information.
dampening flap-statistics	Displays the routing dampening statistics.
filter-list *path-list-number*	Displays the routing information matching the filter-list.
inconsistent-as	Displays the routing information of the inconsistent source AS.
prefix-list *ipv6-prefix-list-name*	Displays the routing information matching the specified prefix-list.
quote-regexp *regexp*	Displays the BGP routing information with the AS path attribute matching the specified regexp within the double quote marks.
regexp *regexp*	Displays the BGP routing information with the AS path attribute

	matching the specified regexp.
route-map *map-tag*	Displays the routing information matching the specified route-map filtering condition.
neighbors *neighbor-address* **received-routes**	Displays all routing information received from the specified peer (including accepted and refused routes).
neighbors *neighbor-address* **routes**	Displays all the routing information received from the peer and accepted.
neighbors *neighbor-address* **advertised-routes**	Displays all the routing information sent to the specified peer.
neighbors *neighbor-address* **policy**	Displays the related routing policy information of BGP neighbors. (General)
neighbors *neighbor-address* **policy detail**	Displays the related routing policy information of BGP neighbors. (Detail)

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Use this command to view the IPv6 unicast route information of BGP. You can filter the information with the specified parameter to display the matching route information. The function and use of this command is similar to the **show bgp ipv4 unicast** command, please refer to the command.

Configuration Examples N/A

Related Commands

Command	Description
show bgp ipv4 unicast	Displays the IPv4 unicast route information of BGP.

Platform Description None

5.189 show bgp ipv6 unicast dampening parameters

Use this command to display the IPv6 unicast route dampening parameters configured for BGP.

show bgp ipv6 unicast [vrf *vrf-name* **] dampening parameters**

Parameter Description

Parameter	Description
vrf-name	VRF name.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to display the IPv6 unicast route dampening parameters configured for the BGP. The function and use of this command are similar to the **show bgp ipv4 unicast dampening parameters** command. Please refer to the command.

Configuration Examples N/A

Related Commands

Command	Description
show bgp ipv4 unicast dampening parameters	Displays the IPv4 unicast route dampening parameters configured for BGP.

Platform Description None

5.190 show bgp ipv6 unicast neighbors

Use this command to display the related information of BGP IPv6 unicast neighbor.

show bgp [**instance** *as-num*] **ipv6 unicast [vrf** ***vrf-name*** **] neighbors** ***neighbor-address***

Parameter Description

Parameter	Description
vrf-name	VRF name
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
neighbor-address	Neighbor IPv6 address.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to view the information of the connection with BGP IPv6 unicast neighbor. The function and use of this command are similar to the **show bgp ipv4 unicast neighbors** *neighbor-address* command. Please refer to the command.

Configuration Examples N/A

Related

Command	Description

Commands		
	show bgp ipv4 unicast neighbors neighbor-address	Displays the related information of BGP IPv4 unicast neighbor.

Platform Description None

5.191 show bgp ipv6 unicast paths

Use this command to display the path information of the IPv6 unicast in the route database.

show bgp [**instance** *as-num*] **ipv6 unicast [vrf** *vrf-name* **] paths**

Parameter Description

Parameter	Description
vrf-name	VRF name
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to view the path information in the route database.

Configuration Examples

The following example displays the path information of the IPv6 unicast in the route database.

```
Ruijie# show bgp ipv6 unicast paths
Address  Refcnt Path
[0x1d7806a0:0] (67)
[0x1d7389a0:13] (20) 10
```

Related Commands

Command	Description
show bgp ipv4 unicast paths	Displays the path information of the IPv4 unicast in the route database.

Platform Description None

5.192 show bgp ipv6 unicast summary

Use this command to display the related information of BGP IPv6 unicast.

show bgp [**instance** *as-num*] **ipv6 unicast [vrf** *vrf-name* **] summary**

Parameter Description

Parameter	Description
vrf-name	VRF name.
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to display the related information of BGP IPv6 unicast. The function and use of this command are similar to the **show bgp ipv4 unicast summary** command. Please refer to the command.

Configuration Examples N/A

Related Commands

Command	Description
router bgp	Enables the BGP protocol
show bgp ipv4 unicast summary	Displays the related information of BGP IPv4 unicast.

Platform Description None

5.193 show bgp ipv6 unicast update-group

Use this command to display information about an update-group in the BGP IPv6 unicast address family.

show bgp [**instance** *as-num*] **ipv6 unicast** [**vrf** *vrf-name*] **update-group** [*neighbor-address* | *update-group-index*] [**summary**]

Parameter Description

Parameter	Description
vrf-name	Specifies a VRF instance name.
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in

	dot mode.
neighbor-address	Specifies a neighbor that belongs to an update-group whose information needs to be displayed.
update-group-index	Specifies an update-group whose information needs to be displayed.
summary	Displays neighbor-related information.

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide This command is used to display information about an update-group in the BGP IPv6 address family.

Configuration Example The following example displays information about an update-group in the BGP IPv6 unicast address family.

```
Ruijie#show bgp ipv6 update-group
BGP version 4 update-group 1(ref 2), internal, Address Family: IPv6 Unicast
  Update message formated 2, replicated 2
  Minimum route advertisement interval is 0 seconds
  Minimum AS origination interval is 1 seconds
  Format state: Current working
              Refresh blocked
  Has 1 members:
   192:168:195::183
```

The following example displays the neighbor summary of update-group 1 in the BGP IPv6 unicast address family.

```
Ruijie # show bgp ipv6 unicast update-group 1 summary
BGP router identifier 192.168.183.1, local AS number 23
BGP table version is 2
2 BGP AS-PATH entries
1 BGP community entries
Neighbor        V    AS   MsgRcvd  MsgSent  TblVer  InQ  OutQ  Up/Down
State/PfxRcd
192:168:195::79   4    24     0       0       0     0    0    never      Active
192:168:195::183  4    23     17      15      1     0    0    00:09:04    8
Total number of neighbors 2
```

Field description:

Field	Description
BGP router identifier	BGP router ID

local AS number	Local AS number of BGP
BGP table version	Version of the BGP routing table
BGP AS-PATH entries	Number of AS path entries
BGP community entries	Number of community attribute entries
Neighbor	Peer address
V	Protocol version
AS	Peer AS number
MsgRcvd	Number of received packets
MsgSent	Number of sent packets
State/P xRcd	Status of the neighbor state machine or number of received routing entries

Prompt N/A

Platform Description N/A

5.194 show bgp l2vpn

Use the following command to display the BGP L2VPN routing information.

show bgp [**instance** *as-num*] **l2vpn** { **vpls** | **vpws | evpn** } **all**

Use the following command to display the routing information of the BGP L2VPN address family of the *ve_id:offset.*

show bgp [**instance** *as-num*] **l2vpn** { **vpls | vpws** } **all** *ve_id:offset*

Use the following command to display the routing information of the BGP L2VPN EVPN address family.

show bgp [**instance** *as-num*] **l2vpn evpn all** { **ethernet-ad** | **ethernet-segment** | **inclusive-multicast** | **ip-prefix** | **mac-ip** } [**detail**]

Use the following command to display the category 2 routing information of the BGP L2VPN EVPN address family.

show bgp [**instance** *as-num*] **l2vpn evpn all mac-ip** *mac_addr* [*ip_addr* [**detail**] | *ipv6_addr* [**detail**] | **detail**]

Use the following command to display the category 5 routing information of the BGP L2VPN EVPN address family.

show bgp [**instance** *as-num*] **l2vpn evpn all ip-prefix** { *ip_addr* [**detail**] | *ipv6_addr* [**detail**] | **detail** }

Use the following command to display the neighbor information of the BGP L2VPN address family.

show bgp [**instance** *as-num*] **l2vpn** { **vpls** | **vpws |evpn** } **all neighbor** [*neighbor-address*] [**policy** [**detail**]]Use the following command to display the neighbor summary information of BGP L2VPN address family.

show bgp [**instance** *as-num*] **l2vpn** { **vpls** | **vpws | evpn** } **all summary**

Use the following command to display the L2VPN VPLS/VPWS information on the specified RD.

show bgp [**instance** *as-num*] **l2vpn** { **vpls | vpws** } **rd** *vpn_rd* [*ve_id:offset*]

Use the following command to display the L2VPN VPLS/VPWS information on the specified VFI.

show bgp [**instance** *as-num*] **l2vpn** { **vpls | vpws** } **vfi** *vfi_name* [*ve_id:offset*]

Use the following command to display the L2VPN information on the specified RD.

show bgp [**instance** *as-num*] **l2vpn evpn rd** *vpn_rd* [[**ethernet-ad** | **ethernet-segment** | **inclusive-multicast** | **ip-prefix** | **mac-ip**] [**detail**]]

Use the following command to display the L2VPN information on the specified EVI.

show bgp [**instance** *as-num*] **l2vpn evpn evi** *vni-id* [[**ethernet-ad** | **ethernet-segment** | **inclusive-multicast** | **ip-prefix** | **mac-ip**] [**detail**]]

Parameter Description

Parameter	Description
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
evpn	Displays EVPN information.
vpls	Displays VPLS information.
vpws	Displays VPWS information.
all	Displays all NLRI information that contains the VPLS instance or the VPWS instance.
ve_id:offset	Displays the VFI instance information of the specified ve_id:offset
ethernet-ad [**detail**]	Displays basic (detailed) information of the first type of BGP L2VPN EVPN routes.
ethernet-segment [**detail**]	Displays basic (detailed) information of the fourth type of BGP L2VPN EVPN routes.
inclusive-multicast [**detail**]	Displays basic (detailed) information of the third type of BGP L2VPN EVPN routes.
ip-prefix [*ip_addr* [**detail**] | *ipv6_addr* [**detail**] | **detail**]	Displays basic (detailed) information of routes with specific IP address or IPv6 address in the fifth type of BGP L2VPN EVPN routes.
mac-ip [**detail**]	Displays basic (detailed) information of the second type of BGP L2VPN EVPN routes.
mac-ip *mac_addr* [*ip_addr* [**detail**] | *ipv6_addr* [**detail**] | **detail**]	Displays basic (detailed) information of routes with specific MAC addresses or MAC addresses+IP addresses/IPv6 addresses in the second type of BGP L2VPN EVPN routes.
neighbor [*neighbor-address*]	Displays the BGP L2VPN neighbor information. You can specify the specific neighbor information by entering the

	parameter *neighbor-address.* Otherwise all BGP L2VPN neighbor information is displayed.
neighbor *neighbor-address* **policy**	Displays the summarized routing policy information on BGP neighbor.
neighbor *neighbor-address* **policy detail**	Displays the detailed routing policy information BGP neighbor,
summary	Displays main BGP L2VPN information, including site ID, OFFSET, LABEL BASE and NEXT HOP.
rd *vpn_rd*	The specified RD.
vfi *vfi_name*	The specified VFI instance.
evi *vni-id*	The specified evI instance.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Use the command **show bgp l2vpn vpls** to display the VPLS information of local configuration, including Site ID, LABEL BASE and so on.

Configuration Examples

The following example displays all L2VPN VPLS address family routing information.

```
Ruijie(config)# show bgp l2vpn vpls all
BGP table version: 4, local router ID is 172.168.201.1
Status codes: s suppressed, d damped, h history, * valid, > best, i -
internal,r RIB-failure, S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete

Network    Next Hop       Metric   LocPrf    Path
Route Distinguisher: 45000:100
*> 2:0     0.0.0.0                         ?
*> 100:3   172.168.201.2   0       100       ?
Route Distinguisher: 45000:200
*>01:10    0.0.0.0        0       32768     ?
*>i200:11  172.168.201.2   0       100       ?
```

The following example displays all L2VPN VPWS address family routing information.

```
Ruijie(config)# show bgp l2vpn vpws all
BGP table version: 4, local router ID is 172.168.201.1
Status codes: s suppressed, d damped, h history, * valid, > best, i -
internal,r RIB-failure, S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete
Network    Next Hop       Metric   LocPrf    Path
Route Distinguisher: 45000:100
*> 3:0     0.0.0.0                         ?
*> 300:3   172.168.201.2   0       100       ?
```

```
Route Distinguisher: 45000:200
*>01:30     0.0.0.0         0       32768      ?
*>i300:11   172.168.201.2   0        200        ?
```

The following example displays all L2VPN EVPN address family routing information.

```
Ruijie(config)# show bgp l2vpn evpn all
BGP table version is 16, local router ID is 1.1.1.1
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
              S Stale, b - backup entry
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop            Metric      LocPrf      Weight Path
Route Distinguisher: 1:100 (Default for EVI 1122)
*> 0:32:1.1.1.1/72  0.0.0.0                                      32768     i

Total number of prefixes 1
Route Distinguisher: 1.1.1.1:100 (Default for EVI 100)
*> 0:6:0011.2233.2016:0:0.0.0.0/128
                    0.0.0.0                                      32768     i
*>i0:6:00d0.f822.33df:0:0.0.0.0/128
                    2.2.2.2                  0         100           0     i
*> 0:6:0011.2233.2016:32:100.1.1.2/128
                    0.0.0.0                                      32768     i
*>i0:6:00d0.f822.33df:32:100.1.1.1/128
                    2.2.2.2                  0         100           0     i
*> 0:32:1.1.1.1/72  0.0.0.0                                      32768     i
*>i0:32:2.2.2.2/72  2.2.2.2                  0         100           0     i

Total number of prefixes 6
```

The following example displays the routing information of the BGP L2VPN VPLS of the *ve_id:offset*.

```
Ruijie(config)# show bgp l2vpn vpls all 4:0
BGP routing table entry for 100:100:4:0
  77 100
    192.168.250.77 from 192.168.250.77 (0.54.121.150)
      Origin IGP, metric 0, localpref 100, valid, external, best
      Extended Community: RT:1:200 RT:12345:11 SoO:12345:11
SoO:0.0.48.58:11 Unknown:12345:0:11 Layer2:5.0.1500
      ve id: 4 offset: 0 block size: 10 label base: 8196
      Last update: Wed Aug 19 04:06:17 1970
```

The following example displays the neighbor summary information of the BGP L2VPN VPLS peer group.

```
Ruijie(config)# show bgp l2vpn vpls summary
BGP router identifier 192.168.250.8, local AS number 23
BGP table version is 1
```

```
2 BGP AS-PATH entries
0 BGP Community entries
0 BGP Prefix entries (Maximum-prefix:4294967295)

Neighbor        V  AS  MsgRcvd  MsgSent  TblVer  InQ  OutQ  Up/Down
State/PfxRcd
192.168.250.77  4  77  6       5        1       0    0     00:01:55  11

Total number of neighbors
```

Command	Description
BGP table version	BGP table version.
Local Router ID	Local Router ID. Generally it is a loopback address.
status codes	Status codes: s :The route is dampened. d :Shielded route flap. h: Historical routes that no longer available * : Valid routes > : Optimal routes i : IBGP routes r : Fails to install the RIB routing table. S: Old routes.
Origin Codes	Origin Codes: i: IGP. e: EGP. ?: Incomplete.
Network	Routing information in the form aa:bb. The aa here represents site ID and the bb represents label model offset.
Next hop	Next hop IP address.
Metric	Metric value of the represent route (if be displayed.)
LocPrf	Local priority.
Path	AS path that reach the destination network.
Route Distinguisher	RD of VPLS.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.195 show bgp l2vpn all connections

Use the following command to display connection information of the Kompella VPLS or the VPWS PW.

show bgp [**instance** *as-num*] **l2vpn** { **vpls | vpws** } **all connections** [**vfi** *vfi_name*] [**neighbor** *neighbor-address* [**policy** [**detail**]] [**site-id** *id* **]** [**detail**]

Parameter Description

Parameter	Description
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
vpls	Displays VPLS information.
vpws	Displays VPWS information.
vfi *vfi_name*	Displays PW information of the specified VFI instance.
neighbor *neighbor-address*	Displays information on the Kompella VFI PW connected with neighbor.
neighbor *neighbor-address* **policy**	Displays summarized routing policy information on the BGP neighbor.
neighbor *neighbor-address* **policy detail**	Displays detailed routing policy information on the BGP neighbor.
site-id *id*	Displays all connection information of all VFI instances of the specified site ID.
detail	Displays the detailed L2VPN connection information.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Use this command to display local configuration and the remote STA information on L2 VFI. If there is no remote STA, only local information is displayed.

Configuration Examples

The following example displays the PW connection information of the BGP L2VPN VPLS address family.

```
Ruijie# show bgp l2vpn vpls all connections
vfi: vpls1 (VPLS: vpnid 1)
  Local Site: 1
  Connect-Site   Status   Neighbor   Remote-Label   local-Label
  2            up      2.2.2.2    1024         80000
  3            up      3.3.3.3    1025         9192
  4            up      4.4.4.4    1024         8192
vfi: vpls2 (VPLS: vpnid 2)
```

```
  Local Site: 1
  Connect-Site   Status   Neighbor   Remote-Label   local-Label
  2            up      2.2.2.2    1124          80001
  3            up      3.3.3.3    1125          9193
  4            down     4.4.4.4    --            --

Ruijie# show bgp l2vpn vpws all connections
vfi: vpws1 (VPWS: vpnid 3)
  Local Site: 1
  Connect-Site   Status   Neighbor   Remote-Label   Local-Label
  5            up      2.2.2.2    1124          73728
  6            up      3.3.3.3    1125          73729
  7            up      4.4.4.4    1124          73730
```

Parameter	Description
vfi	Name of the VFI instance. (n) indicates the VPN ID of the VFI instance.
Local Site	Local site ID.
Connect-Site	Remote site ID.
Status	Whether the PW connection is up or down.
Neighbor	The PW neighbor's IP address.
Remote-Label	The PW remote tag (outbound tag).
Local-Label	The PW local tag (inbound tag).

The following example displays all VFI instance connection information of Site ID 1 of the L2VPN VPWS address family.

```
Ruijie# show bgp l2vpn vpws all connections site 1 detail
vfi: vpws1 (VPWS:vpnid 1)
  Local site: 1
  Label-base          offset      range
  73728              1          10
  73738              11         10
  Remote site: 2 (connected)
    Neighbor address: 172.10.10.2
    Label-base        offset      range
    9000             1          10
    Incoming label: 73729, Outgoing label: 9000

Ruijie# show bgp l2vpn vpls all connections site 1 detail
vfi: vpls1 (VPLS:vpnid 1)
  Local site: 1
  Label-base          offset      range
  8192               1          10
  8292               11         10
  Remote site: 2 (connected)
```

```
   Neighbor address: 172.10.10.2
   Label-base        offset      range
   9000              1           10
   Incoming label: 8193, Outgoing label: 9000
  Remote site: 25 (unconnected)
   Neighbor address: 172.10.10.3
   Label-base        offset      range
   10000             1           10
Incoming label: --, Outgoing label: --
```

Parameter	Description
vfi	Name of the VFI instance. (n) indicates the VPN ID of the VFI instance.
Local Site	Local site ID.
Label-base	Label block base.
Offset	Label block offset.
Range	The maximum number of connected sites.
Remote site	Remote site ID. One local site can be connected with multiple remote sites. Connected: the remote site is connected with the local site. Unconnected: the remote site is not connected with the local site.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.196 show bgp l2vpn update-group

Use this command to display the update-group information of BGP L2VPN address family.

show bgp [**instance** *as-num*] **l2vpn** { **vpls** | **vpws** | **evpn** } **all update-group** [*neighbor-address* | *update-group-index*] [**summary**]

Parameter Description

Parameter	Description
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295,

	represented as 1 to 65535.65535 in dot mode.
vpls	Displays the L2VPN VPLS address family information.
vpws	Displays the L2VPN VPWS address family information.
evpn	Displays the L2VPN EVPN address family information.
neighbor-address	Displays the update-group information of specified neighbor.
update-group-index	Display the specified update-group information.
summary	Display neighbor information.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Display the update-group information of BGP L2VPN address family.

Configuration Examples

The following example displays the update-group information of BGP L2VPN EVPN address family

```
    Ruijie#show bgp l2vpn evpn all update-group
    BGP version 4 update-group 1(ref 2), internal, Address Family: L2VPN
EVPN
      Update message formated 2, replicated 2
      Minimum route advertisement interval is 0 seconds
      Minimum AS origination interval is 1 seconds
      Format state: Current working
                  Refresh blocked
      Has 1 members:
       192.168.195.183
```

The following example displays the neighbor summay of update-group 1 of BGP L2VPN EVPN address family

```
    Ruijie # show bgp l2vpn evpn all update-group 1 summary
    BGP router identifier 192.168.183.1, local AS number 23
    BGP table version is 2
    2 BGP AS-PATH entries
    1 BGP community entries
    Neighbor        V    AS   MsgRcvd  MsgSent  TblVer  InQ  OutQ  Up/Down
State/PfxRcd
    192.168.195.79   4    24     0       0       0     0    0    never
Active
    192.168.195.183  4    23     17      15      1     0    0    00:09:04
8
    Total number of neighbors 2
```

Field	Description

BGP router identifier	BGP router ID
local AS number	Local AS number of BGP
BGP table version	Version of the BGP routing table
BGP AS-PATH entries	Number of AS path entries
BGP community entries	Number of community attribute entries
Neighbor	Peer address
V	Protocol version
AS	Peer AS number
MsgRcvd	Number of received packets
MsgSent	Number of sent packets
State/PfxRcd	Status of the neighbor state machine or number of received routing entries

Platform Description N/A

5.197 show bgp statistics

Use this command to display the BGP statistics information.

show bgp [**instance** *as-num*] **statistics** [**vrf** *vrf-name*]

Parameter Description

Parameter	Description
vrf *vrf-name*	Displays the BGP statistics information of VRF.
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Without the **vrf** parameter, the global BGP statistics information will be displayed.

Configuration Examples

The following example displays the BGP statistics information.

```
Ruijie#show bgp statistics
Local as 100, Router id 1.1.1.1
  Total neighbor 10, Established neighbor 9, Admin-Down neighbor 1
  IBGP neighbor 8, Established IBGP neighbor 8, Admin-Down IBGP neighbor
0
  EBGP neighbor 2, Established EBGP neighbor 1, Admin-Down EBGP neighbor
```

```
1
 AS-PATH entries 1, Community entries 1, Extended-Community entries 0

 For address family: IPv4 Unicast
   Activated neighbor 9, Unactivated neighbor 0
   Activated IBGP neighbor 8, Unactivated IBGP neighbor 0
   Activated EBGP neighbor 1, Unactivated EBGP neighbor 0

 For address family: IPv6 Unicast
   Activated neighbor 0, Unactivated neighbor 9
   Activated IBGP neighbor 0, Unactivated IBGP neighbor 0
   Activated EBGP neighbor 0, Unactivated EBGP neighbor 0
```

Parameter	Description
Router id	ID of BGP router.
Total neighbor	Total number of neighbors.
Established neighbor	Number of UP neighbors.
Admin-Down neighbor	Number of admin down neighbors.
IBGP neighbor	Number of IBGP neighbors.
Established IBGP neighbor	Number of UP IBGP neighbors.
Admin-Down IBGP neighbor	Number of admin down IBGP neighbors.
EBGP neighbor	Number of EBGP neighbors.
AS-PATH entries	Number of AS-PATH entries.
Community entries	Number of community entries.
Extended-Community	Number of extended community entries.
Established EBGP neighbor	Number of UP EBGP neighbors.
Admin-Down EBGP neighbor	Number of admin down EBGP neighbors.
Activated neighbor	Number of activated neighbors.
Unactivated neighbor	Number of unactivated neighbors, not including UP neighbors.
Activated IBGP neighbor	Number of activated IBGP neighbors.
Unactivated IBGP neighbor	Number of unactivated IBGP neighbors, not including UP neighbors.
Activated EBGP neighbor	Number of activated EBGP neighbors.
Unactivated EBGP neighbor	Number of unactivated EBGP neighbors, not including UP neighbors.

Platform

Description N/A

5.198 show evpn

Use this command to display the EVI instance.

show evpn [*vni-id* [**detail**] | **detail**]

Parameter Description

Parameter	Description
vni-id	Indicates the ID of specified EVI instance.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide If an ID of EVI instance is exported, display the information of the EVI. IF no EVI ID is imported, display all EVIs' information.

Configuration Examples

The following example displays all information of EVI 100.

```
Ruijie#show evpn 100 detail
EVI 100(L2 IRB), RD 1.1.1.1:100(auto)
  Import VPN route-target communities
    RT: 100:100(auto)
  Export VPN route-target communities
    RT: 100:100(auto)
  Bind VRF: 0(Default)
  EVI Layer 3 Interface: OverlayRouter 100
  All Route count: 6
    Ethernet Auto-discovery Route count: 0
    MAC/IP Advertisement Route count: 4
    Inclusive Multicast Ethernet Tag Route count: 2
    Ethernet Segment Route count: 0
    Install Route count: 3
```

Parameter	Description
RD	RD value of EVI.
Bind VRF	VRF bound with EVI.
EVI Layer 3 Interface	L3 interface associated with EVI.
Export VPN route-target communities	Value of the exported RT of EVI.
Import VPN route-target communities	Value of the imported RT of EVI.
Route count	Number of routes in EVI instance.

The following example displays key information of EVI.

```
Ruijie#show evpn
vni          rd                           interface
100          1.1.1.1:100                    OverlayRouter 100
```

```
300          1.1.1.1:300                    N/A
789          1.1.1.1:789                    N/A
1000         1.1.1.1:1000                    OverlayRouter 1000
1122         1:100                          N/A
2000         1.1.1.1:2000                    OverlayRouter 2000
3344         1.1.1.1:3344                   N/A
1678889       1.1.1.1:40489                  N/A
Total number: 8
```

Parameter	Description
vni	vni-id of EVI.
rd	RD value of EVI
interface	L3 interface associated with EVI.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.199 show evpn mac

Use this command to display the mobilized or conflict MAC information

show evpn mac {**conflict** | **mobility** } [*vni-id*]

Parameter Description

Parameter	Description
conflict	Display the conflicted MAC
mobility	Display the mobilized MAC
vni-id	Display the ID of specific EVI instance

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide If the parameter has EVI ID, then display the MAC information of specific EVI; if no EVI ID is entered, display the MAC information of all EVI.

Configuration Examples The following example checks the mobilized MAC information.

```
Ruijie#show evpn mac mobility
vni    mac               count  remain-time
```

```
10      0055.1000.0004    2       72
10      0055.1000.000a    1       66
10      0055.1000.000e    1       72
10      0055.1000.0013    1       27
10      0055.1000.0015    4       75
```

Parameter	Description
vni	VNI-ID of EVI.
mac	Mobilized MAC address
count	Mobility times
remain-time	Remaining time of the timer for conflict. Unit: second.

The following example checks the conflict MAC information.

```
Ruijie#show evpn mac conflict
Ruijie#show evpn mac conflict
vni             mac               seq             retry-time
10              0011.0011.e69c    6               -
```

Parameter	Description
vni	vni-id of EVI.
mac	Mobilized MAC address
seq	Sequence number of conflict MAC address
Retry-time	Remaining time for retry. Unit: second

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.200 show ip bgp

Use this command to display the BGP IPv4 unicast address families' route information. The method of use is the same as other BGP show commands.

show ip bgp [**instance** *as-num*] [**vrf** *vrf-name*] [*network* [*network-mask* [**longer-prefixes**]] | **cidr-only | community** [*community-number* [**exact-match**]] **| filter-list** *path-list-number* **| community-list** *community-name* [**exact-match**] **| regexp** *regexp* **| quote-regexp** *regexp* **| extcommunity-list** *extcommunity-name* **| inconsistent-as | prefix-list** *ip-prefix-list-name* **| route-map** *map-tag*]

Display route flap's parameters.

show ip bgp dampening { **flap-statistics** | **dampened-paths | parameters** }

Display neighbors' related information.

show ip bgp [**instance** *as-num*] [**vrf** *vrf-name*] **neighbors** [*neighbor-address* [**received-routes | routes | advertised-routes** [**policy** [**detail**]]]]

show ip bgp [**instance** *as-num*] [**vrf** *vrf-name*] **summary**

Display BGP IPv4 routing information with MPLS lable

show ip bgp [**instance** *as-num*] [**vrf** *vrf-name*] **labels**

Display related information of BGP IPv4 unicast update-group.

show ip bgp [**instance** *as-num*] [**vrf** *vrf-name*] **update-group** [*neighbor-address* | *update-group-index*] [**summary**]

Parameter Description

Parameter	Description
network	Displays specific route information in the route table.
instance	Specify the instance
as-num	Specify the AS number of instance. In the 10.4(3) or later versions, the 4-byte AS notation is supported, namely, the new range of the new AS notation is from 1 to 4294967295, represented as 1 to 65535.65535 in dot mode.
vrf-name	VRF instance name
network-mask	Displays route information in the specific network.
cidr-only	Displays route information without specific category.
community *community-number*	Displays route information containing specific community value. The *community-number* is the group number. The format is AA:NN (autonomous system number/2-byte figure), or the following pre-defined value: internet, no-export, local-as or no-advertise.
community-list *community-name*	Displays the BGP route information of the specified community list. The *community-name* is the name of the community list.
dampening dampened-paths	Displays dampened route information.
dampening flap-statistics	Displays the route flap statistics.
dampening parameters	Displays believed route flap parameters.
extcommunity-list	Displays route information containing specific extcommunity value.
filter-list *path-list-number*	Displays the route information that complies with the filter list. The *path-list-numbe* is the marking number of the filter list.
inconsistent-as	Displays the route information of inconsistent source AS.
neighbors *neighbor-address*	Displays the route information of BGP neighbors. Displays information about a specific neighbor when *neighbor-address* is specified; otherwise, displays information about all BGP IPv4 neighbors.
neighbors *neighbor-address* **received-routes**	Displays all routing information received from the specified peer (including accepted and refused routes).
neighbors *neighbor-address* **routes**	Displays all the routing information received from the peer and accepted.
neighbors	Displays all the routing information sent to the specified peer.

neighbor-address **advertised-routes**	
neighbors *neighbor-address* **policy**	Displays the related routing policy information of BGP neighbors. (General)
neighbors *neighbor-address* **policy detail**	Displays the related routing policy information of BGP neighbors. (Detail)
paths	Displays the route information in the route database.
prefix-list	Displays the route information that complies with the prefix list.
quote-regexp *regexp*	Displays the BGP route information of regular expression in the specified double quotation mark of the AS route attribute.
regexp *regexp*	Displays the BGP route information of specified regular expression of the AS route attribute.
route-map	Displays the route information that complies with the route map.
scan	Displays the BGP route scanning status.
summary	Displays related information of BGP neighbors.
labels	Displays the IPv4 label route information.
update-group [*neighbor-address* | *update-group-index*]	Displays update-group information. If *neighbor-address* is specified, display the update-group information of specific neighbor. If *update-group-index* is specified, display the specific update-group information.

Defaults -

Command Mode Privileged EXEC mode

Usage Guide The **show ip bgp** command is the same as **show bgp ipv4 unicast** in terms of the function. All the parameters in **show bgp ipv4 unicast** apply to **show ip bgp**.

Configuration Examples -

Configuration Examples

Command	Description
show bgp ipv4 unicast	Displays IPv4 unicast route information in BGP route information.

Platform Description -

5.201 stats-reporting-period

Use this command to configure the interval for the BMP module to send status statistics. Use the **no** form of this command to cancel the configured interval for the BMP module to send status statistics. Use the **default** form of this command to restore the default settings.

stats-reporting-period *time*

no stats-reporting-period

default stats-reporting-period

Parameter Description

Parameter	Description
time	Scanning interval, ranging from **30** to **65535** in seconds

Defaults The BMP module does not send status statistics at a fixed interval by default.

Command Mode BMP configuration mode

Default Level 14

Usage Guide This command configures the interval for the BMP module to send status statistics. Without configuring this command, no status statistics are sent when the statistics count is 0 and status statistics are sent every time the statistics count is changed. This command can prevent a large amount of status statistics being sent when the count changes frequently.

Configuration Examples The following example sets the interval for the BMP module to send status statistics to 30s.

```
Ruijie(config)#bmp server 1
Ruijie(config-bmpsrvr)#stats-reporting-period 30
```

Verification Run the **show running-config** command to display the BGP configurations.

5.202 synchronization

Use this command to enable the synchronization mechanism of BGP and IGP routing information. Use the **no** form of this command to restore the default setting.

synchronization

no synchronization

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode BGP configuration mode, IPv4 VRF address family configuration mode, IPv6 VRF address family configuration mode

Usage Guide

The synchronization between BGP and IGP aims to prevent the possible route black hole.
In any of the two cases below, you may cancel the synchronization mechanism to ensure fast convergence of routing information.

- There is no route information which passes through this AS (In general, this AS is an end AS).
- All devices within this AS operate BGP protocol and the full connection relationship is established among all BGP Speakers (The adjacent relationship is established between any two BGP Speakers).

Configuration Examples

The following example enables the synchronization mechanism of BGP and IGP routing information.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# synchronization
```

Related Commands

Command	Description
router bgp	Enables the BGP protocol.

Platform Description None

5.203 table-map

Use this command to control the route information distributed to the kernel table. Use the **no** form of this command to restore the default setting.

table-map *route-map-name*

no table-map

Parameter Description

Parameter	Description
route-map-name	Name of the route-map

Defaults No table-map is configured by default,

Command Mode BGP configuration mode / IPv4 VRF address family configuration mode/ IPv6 VRF address family configuration mode

Usage Guide BGP uses the table-map to control the information distributed to the kernel routing table. The table-map is used to modify attributes of that route information, and it only takes effect on the IPv4 address-family.

Configuration Examples The following example controls the route information distributed to the kernel table.

```
Ruijie(config)# router bgp 65000
```

```
Ruijie(config-router)# table-map bgp_tm
```

Related Commands

Command	Description
route-map	Configures the route-map

Platform Description None

5.204 timers bgp

Use this command to adjust the BGP network timer. Use the **no** form of this command to restore the default value.

timers bgp *keepalive holdtime* [*minimum-holdtime*]

no timers bgp

Parameter Description

Parameter	Description
keepalive	Time interval to send the keepalive message to the BGP peer Range: 0-65535 seconds.
holdtime	Time interval to consider the BGP peer alive Range: 0-65535 seconds.
minimum-holdtime	Allows a minimum holdtime value of neighbor advertisement. It is unrestricted when the value is 0. The range is 0 to 65535 seconds.

Defaults

keepalive: 60 seconds
holdtime: 180 seconds
minum-holdtime: 0 seconds

Command Mode BGP configuration mode

Usage Guide

A proper keepalive value must not exceed one-third of the holdtime value.
If the time is configured for an individual peer or a peer group, that peer or peer-group will use its time to replace the global time configuration and connect the peer.
If the BGP peer group is specified, all members of the peer group adopt the settings of this command. If this command is set for a member of the peer, the setting will overwrite the setting for the group.

Configuration Examples

The following example adjusts the BGP network timer.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# timers bgp 80 240
```

Related

Command	Description

Commands		
	neighbor timers	Sets the keepalive and holdtime values on the basis of neighbors.

Platform Description None

5.205 update-source

Use this command to set the network interface used when a TCP connection is established to the BMP server. Use the **no** form of this command to delete the source address configuration of the BGP peer. Use the **default** form of this command to restore the default settings.

update-source *interface-type interface-number*

no update-source

default update-source

Parameter Description

Parameter	Description
interface-type interface-number	Interface name

Defaults The optimal local interface is used as the output interface by default.

Command Mode BMP configuration mode

Default Level 14

Usage Guide Use this command to use a loopback interface to establish a TCP connection to the BMP server.

If the network interface address is specified when a TCP connection is established, the address must be a valid local interface address. Otherwise, the TCP connection establishment is affected.

Configuration Examples The following example sets loopback 1 as the TCP source address when a connection is established to BGP peer 10.0.0.1.

```
Ruijie(config)# bmp server 1
Ruijie(config-bmpsrvr)# update-source loopback 1
```

Verification Run the **show running-config** command to display the BMP configurations.

Prompt Messages

5.206 vni

Use this command to create an EVI instance. Use the **no** form of this command to delete the EVI instance. Use the **default** form of this command to restore the default settings.

vni *vni-id*

no vni *vni-id*

default vni *vni-id*

Parameter Description

Parameter	Description
vni-id	Indicates the VNI ID. Ranges from 1 to 16777215.

Defaults N/A

Command Mode EVPN configuration mode

Usage Guide Configure the EVPN mode first, and then enter the evpn-vni configuration mode. Run exit command to exit.

Configuration Examples

The following example configures an EVI instance in EVPN mode.

```
Ruijie(config)# evpn
Ruijie(config-evpn)# vni 100
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.207 vni range

Use this command to create EVI instances in batches and enter the EVI instance batch configuration mode. Use the **no** form of this command to delete EVI instances in batches. Use the **default** form of this command to restore the default settings.

vni range *vni-id-list*

no vni range *vni-id-list*

default vni range *vni-id-list*

Parameter Description

Parameter	Description
vni-id-list	Name of the VNI ID list

Defaults N/A

Command Mode EVPN configuration mode.

Default Level 14

Usage Guide

- The configuration fails if the number of configured VNI instances exceeds the capacity or a VNI instance is being deleted.
- The RD values of different VNI instances must be different. Therefore, only the automatic RD configuration mode is available for configuring VNI instances in batches, and VNI instances cannot be configured manually.

Configuration Examples The following example configures EVI instances in batches in EVPN configuration mode.

```
Ruijie(config)# evpn
Ruijie(config-evpn)# vni range 100,200-300
Ruijie(config-evpn-vni-range)#
```

Verification Run the **show running-config** command to display the EVPN configurations.

Prompts 1. The following error information is displayed if the number of VNI instances exceeds the capacity.

```
% this range configuration may beyond vni capacity(8000). please check your input
```

2. The following error information is displayed if a VNI instance is being deleted.

```
% evpn evi 100 is deleting, Fail to configure vni range.
```

5.208 vrf

Use this command to establish a TCP connection to the BMP server under a VRF instance. Use the **no** form of this command to delete VRF configuration and establish a TCP connection to the BMP server globally. Use the **default** form of this command to restore the default VRF configurations.

vrf *vrf-name*

no vrf *vrf-name*

default vrf *vrf-name*

Parameter Description

Parameter	Description
vrf-name	VRF instance name

Defaults No VRF instance is configured by default.

Command BMP configuration mode

Mode

Default Level 14

Configuration Examples The following example establishes a TCP connection to the BMP server under VRF instance vpn1.

```
Ruijie(config)# bmp server 1
Ruijie(config-bmpsrvr)#vrf vpn1
```

Verification Run the **show running-config** command to display the BMP configurations.

Prompt Messages No VRF instance exists.

```
% VRF vrf-name does not exist!
```

6 RIPng Commands

6.1 clear ipv6 rip

Use this command to clear the RIPng routes.

clear ipv6 rip

Parameter Description

Parameter	Description
N/A	N/A

Defaults None

Command mode Privileged EXEC mode

Usage Guide Running this command removes all RIPng routes and this operation may have great impact on the RIPng protocol. This command should be used with caution.

Configuration Examples The following example clears the RIPng routes:

```
Ruijie# clear ipv6 rip
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.2 default-metric

Use this command to configure the default metric for RIPng. Use the **no** form of this command to restore the default value.

default-metric *metric*

no default-metric

Parameter Description

Parameter	Description
metric	Sets the default metric value. The valid range is from 1 to 16. The route is unreachable if the metric value is larger than or equal to 16.

Defaults 1

Command mode Routing process configuration mode.

Usage Guide This command shall be used with the **redistribute** command. When redistributing the route from one route process to RIPng, due to the incompatibility of metric calculation mechanisms of different routing protocols, it fails to translate the routing metric values. To this end, the RIPng metric value shall be defined when translating the metric values. If there is no defined metric value, use the **default-metric** command to define one; and the defined metric value will overwrite the value of the **default-metric** command. By default, the **default-metric** value is 1.

Configuration Examples The following example redistributes the static route the RIP process and set the metric value to 3:

```
Ruijie(config-router)# default-metric 3
Ruijie(config-router)# redistribute static
```

Related Commands

Command	Description
redistribute	Redistributes the route from one route domain to another route domain.

Platform Description N/A

6.3 distance

Use this command to set the administrative distance of RIPng. Use the **no** form of this command to restore the default value.

distance *distance*

no distance

Parameter Description

Parameter	Description
distance	Sets the RIPng administrative distance. The range is from 1 to 254.

Defaults 120

Command mode Routing process configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the RIPng administrative distance as 160:

```
Ruijie(config)# ipv6 router rip
```

```
Ruijie(config-router)# distance 160
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.4 distribute-list

Use this command to filter the in/out route in the prefix list. Use the **no** form of this command to remove route filtering.

distribute-list prefix-list *prefix-list-name* { **in** | **out** } [*interface-type interface-name*]

no distribute-list prefix-list *prefix-list-name* { **in** | **out** } [*interface-type interface-name*]

Parameter Description

Parameter	Description
prefix-list *prefix-list-name*	Name of the prefix list which is used to filter the route.
in | **out**	Filters the in or out route in the distribute list.
interface-type interface-name	(Optional) Applies the distribute list to the specified interface.

Defaults By default, no distribute list is defined.

Command mode Routing process configuration mode.

Usage Guide This command is used to configure the route distribution control list to filter all update routes for the purpose of refusing to receive or send the specified routes. If the interface is not specified, the update routes on all interfaces are filtered.

Configuration Examples The following example filters the received update route on the interface eth0 (only those update routes within the **prefix-list** *allowpre* prefix list range can be received)

```
Ruijie(config)# ipv6 router rip
Ruijie(config-router)# distribute-list prefix-list allowpre in eth0
```

Related Commands

Command	Description
redistribute	Sets route redistribution.

Platform Description N/A

6.5 graceful-restart

Use this command to configure the RIP graceful restart (GR) function for a device. Use the **no** form of this command to restore the default configuration.

graceful-restart [**grace-period** *grace-period*]

no graceful-restart [**grace-period**]

Parameter Description

Parameter	Description
graceful-restart	Enables the GR function.
grace-period	(Optional) Configures the grace period.
grace-period	(Optional) Indicates the user-defined GR period. The default value is the smaller value between twice the update time and 60 seconds. The range is from 1 to 1,800. The unit is second.

Defaults This function is enabled by default.

Command Mode Routing process configuration mode

Usage Guide The GR function is configured on the RIP instances. Different parameters can be configured for different RIP instances.

The GR period refers to the time from the startup to the end of RIP GR. During this period, the forwarding table remains unchanged and the RIP route is restored to the state before protocol restart. When the GR period expires, RIP exits the GR state and performs normal RIP operation.

The **graceful-restart grace-period** command enables users to modify GR period. Note: Make sure that GR is completed before the RIP route is validate and after an RIP route update cycle elapses. If an improper value is configured, non-stop data forwarding cannot be ensured during the GR process. For example, if the GR period is longer than the time when the neighbor's route is unavailable and GR is not completed before the route is validated, then the neighbor is not re-informed of the route and forwarding of the neighbor's route is terminated when it is validated, which results in data forwarding interruption. Therefore, unless otherwise specified, it is not recommended to adjust the GR period. If the period needs to changed, determine that the grace period is longer than the route update cycle and shorter than the time when the route is unavailable in combination with the configuration of the **timers basic** command.

⚠ During the RIP GR period, the network must be stable.

Configuration Examples The following example enables the RIP GR function and configures the GR period parameters of the GR function.

```
Ruijie(config)# router rip
Ruijie(config-router)# graceful-restart grace-period 90
```

Related Commands

Command	Description
timers basic	Configures RIP timers.

Platform Description N/A

6.6 ipv6 rip default-information

Use this command to generate a default IPv6 route to the RIPng. Use the **no** form of this command to remove the default route.

ipv6 rip default-information { **only** | **originate**} [**metric** *metric-value*]

no ipv6 rip default-information

Parameter Description

Parameter	Description
only	Advertises the IPv6 default route only.
originate	Advertises both of the IPv6 default route and other routes.
metric *metric-value*	Sets the metric value for the default route. The valid range is from 1 to 15. The default metric is 1.

Defaults By default, no default route is configured.

Command mode Interface configuration mode

Usage Guide With this command configured on an interface, the interface advertises an IPv6 default route and the route itself is not to join the device route forwarding table and the RIPng route database.

To avoid the route loop, once this command has been configured on the interface, RIPng refuses to receive the default route update message advertised from the neighbor.

Configuration Examples The following example creates a default route to the RIPng routing process on the interface ethernet0/0 and enable this interface to advertise the default route only:

```
Ruijie(config)# interface ethernet 0/0
Ruijie(config-if)# ipv6 rip default-information only
```

Related Commands

Command	Description
show ipv6 rip	Displays the RIPng process and statistics.
show ipv6 rip database	Displays the RIPng route.

Platform N/A

Description

6.7 ipv6 rip enable

Use this command to enable the RIPng on the interface. Use the **no** form of this command to disable RIPng on the interface.

ipv6 rip enable

no ipv6 rip enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command mode Interface configuration mode.

Usage Guide This command is used to add the RIPng interface. Before this command is configured, if the RIPng is not enabled, use this command to enable the RIPng automatically.

Configuration Examples The following example enables the RIPng on the interface 0/0:

```
Ruijie(config)# interface ethernet 0/0
Ruijie(config-if)# ipv6 rip enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.8 ipv6 rip metric-offset

Use this command to set the interface metric value. Use the **no** form of this command to remove the metric configurations.

ipv6 rip metric-offset *value*

no ipv6 rip metric-offset

Parameter Description

Parameter	Description
value	Sets the interface metric value on the interface. The valid range is from 1 to 16.

Defaults 1

Command mode Interface configuration mode.

Usage Guide Before the route is added to the routing list, the interface metric value shall be upon the route metric. To this end, the interface metric value influences the route usage.

Configuration Examples The following example sets the metric value of the interface Ethernet 0/1 as 5:

```
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if)# ipv6 rip metric-offset 5
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.9 ipv6 router rip

Use this command to create the RIPng process and enter routing process configuration mode. Use the **no** form of this command to remove the RIPng process.

ipv6 router rip

no ipv6 router rip

Parameter Description

Parameter	Description
N/A	N/A

Defaults No RIPng process is configured by default.

Command mode Global configuration mode.

Usage Guide N/A.

Configuration Examples The following example creates the RIPng process and enter routing process configuration mode:

```
Ruijie(config)# ipv6 router rip
```

Related Commands

Command	Description
ipv6 rip enable	Enables the RIPng on the specified interface.

Platform Description N/A

6.10 passive-interface

Use this command to disable the interface to send update packets. Use the **no** form of this command to enable the interface to send update packets.
passive-interface { **default** | *interface-type interface-num* }
no passive-interface { **default** | *interface-type interface-num* }

Parameter Description

Parameter	Description
default	Enables the passive mode on all interfaces.
interface-type interface-num	Interface type and interface number.

Defaults No passive interface is configured by default.

Command mode Routing process configuration mode.

Usage Guide You can use the **passive-interface default** command to enable the passive mode on all interfaces. Then ,use the **no passive-interface** *interface-type interface-num* command to remove the specified interface from the passive mode.

Configuration Examples The following example enables the passive mode on all interfaces and remove interface ethernet 0/0 from the passive mode:

```
Ruijie(config-router)# passive-interface default
Ruijie(config-router)# no passive-interface ethernet 0/0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.11 redistribute

Use this command to redistribute the route of other routing protocols to RIPng. Use the **no** form of this command to remove the redistribution configuration.
redistribute { **bgp** | **connected** | **isis** [*area-tag*] | **ospf** *process-id* | **static**} [**metric** *metric-value* | **route-map** *route-map-name*]

no redistribute { **bgp** | **connected** | **isis** [*area-tag*] | **ospf** *process-id* | **static**} [**metric** *metric-value* | **route-map** *route-map-name*]

Parameter Description

Parameter	Description
bgp	Redistributes the BGP routes to RIPng.
connected	Redistributes the connected routes to RIPng.
isis [*area-tag*]	Redistributes the ISIS routes to RIPng. *area-tag* indicates the ISIS process number.
ospf *process-id*	Redistributes the OSPF routes to RIPng. *process-id* indicates the OSPF process number, and the range is from 1 to 65,535.
static	Redistributes the static routes to RIPng.
metric *metric-value*	(Optional) Sets the metric value for the route redistributed to RIPng.
route-map *route-map-name*	(Optional) Sets the redistribution route filtering.

Defaults

By default, the routes of other routing protocols are not redistributed.
If the **default-metric** command is not configured, the default metric value is 1;
By default, the **route-map** is not configured;
By default, all sub-type routes in the specified routing process are redistributed.

Command mode

Routing process configuration mode.

Usage Guide

This command is used to redistribute the external routes to RIPng.
It is unnecessary to transform the metric of one routing protocol into another routing protocol in the process of the route redistribution, for the metric calculation methods of the different routing protocols are different. The RIP and OSPF metric calculations are incomparable for the reason that the RIP metric calculation is hop-based while the OSPF one is bandwidth-based.
The instance, from where the routing information is redistributed to the RIPng, must be specified in the process of configuring the multi-instance protocol redistribution.

Configuration Examples

The following example redistributes the static route, use the route map *mymap* to filter and set the metric value as 8:

```
Ruijie(config)# ipv6 router rip
Ruijie(config-router)# redistribute static route-map
mymap metric 8
```

Related Commands

Command	Description
default-metric	Defines the default RIPng metric value when redistributing other routing protocols.
distribute-list	Filters the RIPng routing update packets.

Platform Description N/A

6.12 show ipv6 rip

Use this command to show the parameters and each statistical information of the RIPng routing protocol process.

show ipv6 rip

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples

```
Ruijie# show ipv6 rip
Routing Protocol is "RIPng"
  Sending updates every 10 seconds with +/-50%, next due in 8 seconds
  Timeout after 30 seconds, garbage collect after 60 seconds
  Outgoing update filter list for all interface is:
    distribute-list prefix aa out
  Incoming update filter list for all interface is: not set
  Default redistribution metric is 1
  Default distance is 120
  Redistribution:
     Redistributing protocol connected route-map rm
     Redistributing protocol static
     Redistributing protocol ospf 1
  Default version control:  send version 1, receive version 1
  Interface              Send   Recv
     VLAN 1              1      1
     Loopback 1           1      1
  Routing Information Sources:
     None
```

Related Commands

Command	Description
show ipv6 rip	Displays the parameters and each statistical information of the RIPng process.

Platform Description N/A

6.13 show ipv6 rip database

Use this command to display the RIPng route entries.

show ipv6 rip database

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples

```
Ruijie# show ipv6 rip database
Codes: R - RIPng,C - Connected,S - Static,O - OSPF,B - BGP
sub-codes:n - normal,s - static,d - default,r - redistribute,
          i - interface, a/s - aggregated/suppressed
S(r)   2001:db8:1::/64, metric 1, tag 0
          Loopback 0/::
S(r)   2001:db8:2::/64, metric 1, tag 0
          Loopback 0/::
C(r)   2001:db8:3::/64, metric 1, tag 0
          VLAN 1/::
S(r)   2001:db8:4::/64, metric 1, tag 0
          Null 0/::
C(i)   2001:db8:5::/64, metric 1, tag 0
          Loopback 1/::
S(r)   2001:db8:6::/64, metric 1, tag 0
          Null 0/::
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.14 split-horizon

Use the **split-horizon** command to enable the RIPng split-horizon function in routing process configuration mode. Use the **no** form of this command to disable this function. Use the **split-horizon poisoned-reverse** command to enable the RIPng poisoned reverse horizontal split function in routing process configuration mode. Use the no form of this command to disable this function.

split-horizon poisoned-reverse

no split-horizon poisoned-reverse

Parameter Description

Parameter	Description
poisoned-reverse	(Optional) Enables the poisoned-reverse horizontal split.

Defaults RIPng split horizon is enabled by default.

Command mode Routing process configuration mode.

Usage Guide In the process of packet updating, split-horizon function prevents some routing information from being advertised through the interface learning those routing information. The poisoned reverse horizontal split function advertises some routing information to the interface learning those routing information, and the metric value is set as 16. The RIPng routing protocol belongs to the distance vector routing protocol, so the horizontal split shall be noticed in the actual application. You can use the **show ipv6 rip** command to determine whether the RIPng split-horizon function is enabled or not.

Configuration Examples The following example disables the RIPng horizontal split:

```
Ruijie(config)# ipv6 router rip
Ruijie(config-router)# no split-horizon
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.15 timers

Use this command to adjust the RIPng timer. Use the **no** form of this command to restore the default settings.

timers *update invalid flush*

no timers

Parameter Description

Parameter	Description
update	Sets the routing update time, in seconds. The update parameter defines the period of sending the routing update packets by the device. The invalid and flush parameter reset once the update packets are received.
invalid	Sets the routing invalid time, in seconds, starting from receiving the last valid update packet. The invalid parameter defines the invalid time for the un-updated routing in the routing list. The routing invalid time shall be three times larger than the routing update time. The routing will be invalid if no update packets are received within the routing invalid time, and it will reset if the update packets are received within the invalid time.
flush	Sets the routing flush time, in seconds, starting from RIPng entering to invalid state. The invalid routing will be removed from the routing list if the flush time expires.

Defaults The default update time is 30 seconds; the default invalid time is 180 seconds; and the default flush time is 120 seconds.

Command mode Routing process configuration mode.

Usage Guide Adjusting the above time may speed up the RIPng convergence time and the troubleshooting time. The RIPng time must be consistent for the devices connecting to the same network. You are not recommended to adjust the RIP time, except for the specific requirement.
Use the **show ipv6 rip** command to view the current RIPng time parameter setting.
In the low-speed link, with the short time configured, large amount of the update packets consumes a lot of bandwidth. Generally, the short time can be configured in the Ethernet or 2Mbps-higher line to shorten the convergence time of the network routing.

Configuration Examples The following example sends the RIP update packets every 10 seconds. The routing will be invalid if no update packets are received within 30 seconds, and the routing will be removed after being invalid for 90 seconds.

```
Ruijie(config)# ipv6 router rip
Ruijie(config-router)# timers 10 30 90
```

Related Commands

Command	Description
show ipv6 rip	Displays the parameters and the statistical information of the RIPng process.
show ipv6 rip database	Displays the RIPng routes.

Platform N/A

Description

7 NSM Commands

7.1 clear ip mroute

Use this command to clear the route cache.

clear ip route [**vrf** *vrf_name*] { *** |** *network* [*netmask*] | }

Parameter description

Parameter	Description
vrf *vrf_name*	(Optional) Specifies the route cache of the specified VRF instance. If no VRF is specified, the route cache of all VRF instances is cleared.
*	Clears all route cache.
network	Specifies the route cache of the network or subnet.
netmask	(Optional) Subnet mask. If no subnet mask is specified, the longest match principle is used when you match *network* with the route. The cache of the longest match is cleared.

Command mode Privileged EXEC mode.

Usage guidelines Clearing route cache clears the corresponding routes and triggers the routing protocol relearning. Please note that clearing all route cache leads to temporary network disconnection.

Examples The following example clears the cache of the route which is the longest match with IP address 192.168.12.0.

```
clear ip route 192.168.12.0
```

Related commands

Command	Description
N/A	N/A

Platform description This command is not supported on layer 2 devices.

7.2 clear ip route arp scan times

Use this command to clear the ARP request transmission count and start counting again.

clear ip route arp scan times

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode

Default Level 1

Usage Guide If the configured transmission count of ARP requests is 10 but the ARP still fails after the ARP request has been sent 10 times, the device no longer sends the ARP request. If you need to continue to send the ARP request, use this command to clear the count so that the device can continue to actively send the ARP request.

Examples The following example clears the transmission count of ARP requests.

```
Ruijie(config)# ip route scan arp times 10
Ruijie # clear ip route arp scan times
```

7.3 ip active-route real-time summary

Use this command to enable the real-time statistic of active routes. Use the **no** or **default** form of this command to restore the default settings.

ip active-route real-time summary

no ip active-route real-time summary

default ip active-route real-time summary

Parameter Description

Parameter	Description
N/A	

Defaults The function is disabled by default.

Command Mode Global configuration mode

Usage Guide The real-time statistic of active routes mainly applies to the scenario when GRPC periodic samples or gets active routes, or run the show ip route summary command frequently, so as to reduce the statistic time of displaying active routes in large volume.
It is not recommended to enable the function in normal scenario, especially with high demand of routing convergence.

Examples The following example enables/disables the real-time statistic of active routes.

```
Ruijie(config)# ip active-route real-time summary
Ruijie(config)# no ip active-route real-time summary
```

Related

Command	Description

Commands	N/A	N/A

Platform Description This command is supported on 2-layer devices.

7.4 ip default-gateway

Use this command to configure the default gateway IP address on 2-layer devices. Use the **no** or **default** form of this command to restore the default setting.

ip default-gateway *ip-address*

no ip default-gateway

default ip default-gateway

Parameter Description	Parameter	Description
	ip-address	IPv4 address of the default gateway

Defaults No gateway IP address is configured by default.

Command Mode Global configuration mode

Usage Guide When the device does not know the destination address of a packet, the device will forward the packet to the default gateway.

Examples The following example sets the IP address of default gateway to 192.168.1.1.

```
ip default-gateway 192.168.1.1
```

Related Commands	Command	Description
	N/A	N/A

Platform Description This command is supported on 2-layer devices.

7.5 ip default-network

Use this command to configure the default network globally. Use the **no** form of this command to restore the default setting.

ip default-network *network*

no ip default-network *network*

Parameter description	Parameter	Description
	network	Default network

Default configuration The default is 0.0.0.0/0.

Command mode Global configuration mode.

Usage guidelines
The goal of this command is to generate the default route. The default network must be reachable in the routing table, but not the directly connected network.
The default network always starts with an asterisk (“*”), indicating that it is the candidate of the default route. If there is connected route and the route without the next hop in the default network, the default route must be a static route.

Examples
The following example sets 192.168.100.0 as the default network. Since the static route to the network is configured, the device will automatically generate a default route.

```
ip route 192.168.100.0 255.255.255.0 serial 0/1
ip default-network 192.168.100.0
```

The following example sets 200.200.200.0 as the default network. The route becomes the default one only when it is available in the routing table.

```
ip default-network 200.200.200.0
```

Related commands

Command	Description
show ip route	Displays the routing table.

7.6 ip fast-reroute static route-map

Use this command to enable static fast reroute. Use the **no** or **default** form of this command to restore the default setting.
ip fast-reroute [**vrf** *vrf-name*] **static route-map** *route-map-name*
no ip fast-reroute [**vrf** *vrf-name*]
default ip fast-reroute [**vrf** *vrf-name*]

Parameter Description

Parameter	Description
vrf *vrf-name*	VRF
route-map-name	Route map
static	Backup route

Default This function is disabled by default.

Command Mode Global configuration mode

Usage guideline
Fast reroute provides an active next-hop and a backup one. If the active next-hop fails, the backup next-hop is used for forwarding.
To enhance the performance of fast reroute, enable the BFD detection function for the active next-hop. For interfaces that are up or down, to shorten the interruption time of fast reroute, configure

carrier-delay *0 in the interface configuration mode of the active outbound interface to optimize the performance.*

For static fast reroute, if the active next-hop fails, the backup next-hop is used for forwarding.

Examples The following example sets the backup next-hop of all static routes to 192.168.1.2 through the outbound interface of GigabitEthernet 0/1.

```
Ruijie(config)# route-map fast-reroute
Ruijie(config-route-map)# set fast-reroute backup-interface GigabitEthernet 0/1
 backup-nexthop 192.168.1.2
Ruijie(config-route-map)# exit
Ruijie(config)# ip fast-reroute static route-map fast-reroute
```

Related command

Command	Description
fast-reroute	Configures OSPF fast reroute.

Platform Description This command is not supported on 2-layer devices.

7.7 ip recur-route fastswitch-nexthop

Use this command to enable the recursive routing fast convergence.

ip recur-route fastswitch-nexthop

Use the **no** form of this command to disable the recursive routing fast convergence.

no ip recur-route fastswitch-nexthop

Use the **default** form of this command to restore the default configuration.

default ip recur-route fastswitch-nexthop

Parameter Description

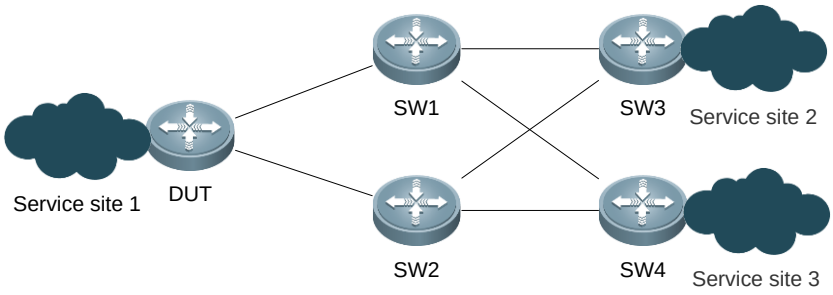
Parameter	Description
N/A	N/A

Defaults The recursive routing fast convergence is disabled by default.

Command Mode Global configuration mode

Default Level 14

Usage Guide



As shown in the figure above, the DUT establishes IS-IS neighbor relationships with SW1 and SW2, SW1 and SW2 separately establish an IS-IS neighbor relationship with SW3 and SW4, and the DUT establishes IBGP neighbor relationships with SW3 and SW4. Service sites access the network via EBGP. In the scenario shown above, BGP routes may be recursed to IS-IS routes. When the link between SW1 and SW3 is disconnected, the IS-IS route will change and the BGP route that relies on the IS-IS route needs to be re-calculated. Before the calculation result is delivered to the forwarding plane, the BGP traffic from service site 1 to service site 2 still goes through the disconnected link between SW1 and SW3, resulting in traffic interruption. Traffic interruption duration = Link down time + Time required by the local IS-IS system to learn route deletion information + Time required by the local NSM system to receive IS-IS routing information + Time required for calculating the BGP route and delivering the result to the forwarding plane + Link switching time. The switching cannot be completed within 1 second.
If the recursive routing fast convergence function is enabled, the traffic that needs to go through the disconnected link between SW1 and SW 3 can be switched to another normal link within 1 second.

Examples The following example enables/disables the recursive routing fast convergence.

```
Ruijie(config)# ip recur-route fastswitch-nexthop
Ruijie(config)# no ip recur-route fastswitch-nexthop
```

7.8 ip recur-route over default-route disable

Use this command to enable the function of forbidding recursion to the default route.
ip recur-route over default-route disable

Use the **no** form of this command to disable the function of forbidding recursion to the default route.
no ip recur-route over default-route disable

Use the **default** form of this command to restore the default configuration.
default ip recur-route over default-route disable

Parameter Description

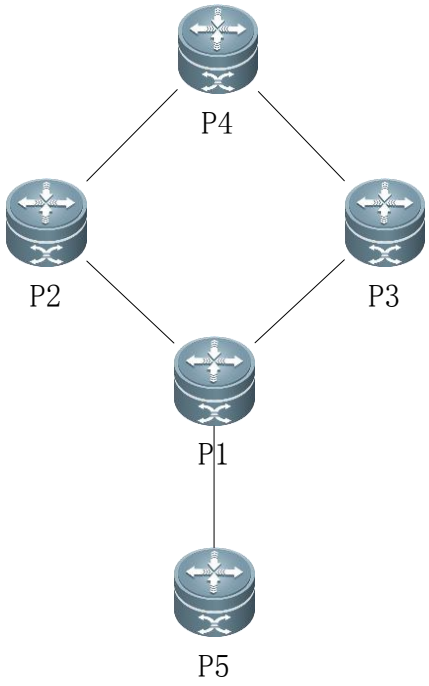
Parameter	Description
N/A	N/A

Defaults The function of forbidding recursion to the default route is disabled by default and routes are recursed to the default route by default.

Command Mode Global configuration mode

Default Level 14

Usage Guide



As shown in the scenario above, P1 establishes non-direct EBGP neighbor relationships with P2 and P3, the load balancing enables service traffic on P1 to be distributed to P4 through P2 and P3. The default route configured on P1 is used to access the extranet through the P1-P5 egress. When the link between P1 and P2 is faulty, it is expected that service traffic is switched to P3. However, some service traffic is guided to the P1-P5 egress due to the existence of the default route. The P1-P5 egress is not a service egress. As a result, some service traffic is lost and the convergence cannot be completed within 1s.
With this command, when the link between P1 and P2 is faulty, traffic is completely switched to P3 and is not guided to P5, achieving convergence within 1s.
Note: When the egress of a default route is not the expected service egress, this command must be configured.

Examples The following example enables/disables the function of forbidding recursion to the default route.

```
Ruijie(config)# ip recur-route over default-route disable
Ruijie(config)# no ip recur-route over default-route disable
```

7.9 ip route

Use this command to configure a static route. Use the **no** or **default** form of this command to restore the default setting.
ip route [**vrf** *vrf_name*] *network net-mask* { *ip-address* | *interface* [*ip-address*] } [*distance*] [**tag** *tag*] [**permanent | {track** *object-number* **| arp}**] [**weight** *number*] [**description** *description-text*] [**disabled** | **enabled**] [**global**]

no ip route [**vrf** *vrf_name*] *network net-mask* { *ip-address* | *interface* [*ip-address*] } [*distance*]
no ip route [**vrf** *vrf_name*] **all**
default ip route [**vrf** *vrf_name*] *network net-mask* { *ip-address* | *interface* [*ip-address*] } [*distance*]

Parameter Description

Parameter	Description
vrf *vrf_name*	Name of the VRF, which can be the single protocol IPv4 VRF or configured IPv4 address family multi-protocol VRF.
network	Network address of the destination
net-mask	Mask of the destination
ip-address	The next hop IP address of the static route
interface	(Optional) The next hop egress of the static route
distance	(Optional) The administrative distance of the static route
tag	(Optional) The tag of the static route
permanent	(Optional) Permanent route ID
track *object-number*	(Optional) Indicates correlation with Track. *object-number* indicates the ID of the track object. By default, the static route is not correlated with the Track function.
weight *number*	(Optional) Indicates the weight of the static route. The weight is 1 by default.
description *description-text*	(Optional) Indicates the description of the static route. By default, no description is configured. *description-text* is a string of one to 60 characters.
disabled/enabled	(Optional) Indicates the enable flag of the static route. The flag is enabled by default.
global	(Optional) Indicates that the next hop belongs to a global VRF. By default, the VRF of the next hop is the same as the VRF specified by *vrf name*.
arp	(Optional) Indicates that the next hop belongs to a global VRF. By default, the VRF of the next hop is the same as the VRF specified by *vrf name*.

Defaults No static route is configured by default.

Command Mode Global configuration mode

Usage Guide

The default administrative distance of the static route is 1. Setting the administrative distance allows the learnt dynamic route to overwrite the static route. Setting the administrative distance of the static route can enable route backup, which is called floating route in this case. For example, the administrative distance of the OSPF is 110. You can set its administrative distance to 125. Then the data can switch over the static route when the route running OSPF fails.
You can specify the VRF that the static route belongs to. The default weight of the static route is 1. To view the static route of non default weight, execute the show ip route weight command. The parameter weight is used to enable WCMP. When there are load-balanced routes to the destination,

the device assigns data flows by their weights. The higher the weight of a route is, the more data flow the route carries. WCMP limit is generally 32 for routers. However, WCMP limit varies by switch models for their chipsets support different weights. When the sum of the weights of load balanced routes is beyond this weight limit, the excessive ones will not take effect.
Enablement/disablement shows the state of the static route. Disablement means the static route is not used for forwarding. The forwarding table used the permanent route until administrator deletes it.
When you configure the static route on an Ethernet interface, do not set the next hop as an interface, for example, ip route 0.0.0.0 0.0.0.0 Fastethernet 0/0. In this case, the switch may consider that all unknown destination networks are directly connected to the Fastethernet 0/0. So it sends an ARP request to every destination host, which occupies many CPU and memory resources. It is not recommended to set the static route to an Ethernet interface.
Association between a static route and a track object can be specified. When association between a static route and a specified track object is configured and the advertised track object status is inactive, the static route does not take effect. If the advertised track object status is active, the static route takes effect based on another status. With association between a static route and a track object, the third-party status concerned by the track object is mainly used to determine whether the static route takes effect. Association between a static route and a track object cannot be used for routes with the permanent attribute.
Association between a static route and an ARP object can be specified. When association between a static route and an ARP object is configured and the ARP object corresponding to the next hop and egress of the route does not exist, the static route does not take effect. When the ARP object corresponding to the next hop and egress of the route exits, the static route takes effect based on another status. Association between a static route and an ARP object cannot be used for routes with the permanent attribute.
Association between a static route and a track object cannot be used together with association between a static route and an ARP object.

Examples

The following example adds a static route to the destination network of 172.16.100.0/24 whose next hop is 192.168.12.1 and administrative distance is 15.

```
ip route 172.16.199.0 255.255.255.0 192.168.12.1 155
```

If the static route has not a specific interface, data flows may be sent thought other interface in case of interface failure. The following example configures data flows to be sent through fastehternet 0/0 to the destination network of 172.16.100.0/24.

```
ip route 172.16.199.0 255.255.255.0 fastethernet 0/0 192.168.12.1
```

Related Commands

This command is not supported on 2-layer devices.

7.10 ip route aggregate

Use this command to configure an aggregate route.
ip route aggregate [**vrf** *vrf_name*] *network netmask* **Null 0** [**tag** *tag*]
Use the following commands to delete a configured aggregate route/all aggregate route
no ip route aggregate [**vrf** *vrf_name*] *network netmask* **Null 0**

no ip route aggregate [**vrf** *vrf_name*] **all**

Use the following commands to restore a configured aggregate route/all aggregate route to the default settings.

default ip route aggregate [**vrf** *vrf_name*] *network netmask* **Null 0**

default ip route aggregate [**vrf** *vrf_name*] **all**

Parameter Description

Parameter	Description
vrf *vrf_name*	(Optional) Route VRF which can be the single protocol IPv4 VRF or configured IPv4 address family multi-protocol VRF. Global VRF by default.
network	Network address of the destination
netmask	Mask of the destination
Null 0	Not configure the next hop IP address and egress of the aggregate route
tag	(Optional) The tag of the aggregate route, 0 by default
all	(Optional) Delete all aggregate routes of the specific VRF.

Defaults No aggregate route is configured by default.

Command Mode Global configuration mode

Usage Guide The command takes effect in OPENCONF YANG to record the configuration of aggregate rotues. The actual effect is like black hole route.

Examples The following example adds an aggregate route to the destination network of 1.1.1.0/24 whose TAG is 32.

```
ip route aggregate 1.1.1.0 255.255.255.0 Null 0 tag 32
```

Related Commands This command is not supported on 2-layer devices.

7.11 ip route arp-to-host delay-time

Use this command to configure the delayed redistribution of ARP-to-host route. Use the **no** or **default** form of this command to restore the default setting.

ip route arp-to-host delay-time *time-number*

no ip route arp-to-host delay-time

default ip route arp-to-host delay-time

Parameter Description

Parameter	Description
time-number	Indicates the time of the delayed redistribution of ARP-to-host. The unit is second, the range is 1-1000, and the default value is 0.

Defaults The delayed redistribution of ARP-to-host rout is disabled by default.

Command Mode Global configuration mode

Usage Guide After the delayed redistribution is configured, the redistribution will be delayed according to the specified time for the ARP packets. The redistribution route of ARP failure packet is immediately advertised.

Examples The following example delays the redistribution of arp-to-host route to protocol module for 10 seconds.

```
Ruijie(config)# ip route arp-to-host delay-time 10
```

Related Commands N/A

Platform Description This command is not supported on 2-layer devices.

7.12 ip route arp-to-host interface

Use this command to enable ARP-to-host conversion. Use the **no** or **default** form of this command to restore the default setting.
ip route arp-to-host interface *interface-name*
no ip route arp-to-host interface *interface-name*
default ip route arp-to-host interface *interface-name*

Parameter Description

Parameter	Description
interface-name	Indicates name of an interface.

Defaults The ARP-to-host conversion is disabled by default.

Command Mode Global configuration mode

Usage Guide Please make sure the interface is a layer 3 interface

Examples The following example enable ARP-to-host conversion.

```
Ruijie(config)# ip route arp-to-host interface vlan 40
```

Related Commands N/A

Platform Description This command is not supported on 2-layer devices.

7.13 ip route arp-to-host tag

Use this command to configure the *tag* attribute of ARP-to-host conversion. Use the **no** or **default** form of this command to restore the default setting.

ip route arp-to-host tag *tag-number*

no ip route arp-to-host tag *tag-number*

default ip route arp-to-host tag *tag-number*

Parameter Description

Parameter	Description
tag-number	Indicates value of tag. It is 0 by default.

Defaults It is disabled by default.

Command Mode Global configuration mode

Usage Guide N/A

Examples The following example configures the tag attribute of ARP-to-host conversion.

```
Ruijie(config)# ip route arp-to-host tag 5
```

Related Commands N/A

Platform Description This command is not supported on 2-layer devices.

7.14 ip route delay-uninstall times

Use this command to configure the buffer time of batch deleting routes.

ip route delay-uninstall times *number*

Use the **no** form of this command to delete the buffer time and restore the default configuration.

no ip route delay-uninstall times

Use the **default** form of this command to restore the default configuration.

default ip route delay-uninstall times

Parameter Description

Parameter	Description

number	0 by default, which indicates deleting the route immediately. Range: 1-100 (s)

Defaults The function is disabled by default.

Command Mode Global configuration mode

Default Level 14

Usage Guide By configuring the buffer time of batch deleting routes in the case of large route amount, the route converge speed of BGP update can be improved. It is recommended to set the time as 5s; if the route amount is very large, the time can be set larger.

Examples The following example configures the buffer time of batch deleting routes and disables the function.

```
Ruijie(config)# ip route delay-uninstall times 5
Ruijie(config)# no ip route delay-uninstall times
```

Platform Description This command is not supported on 2-layer devices.

7.15 ip route notify delete always

Use this command to enable the function of directly deleting BGP routes during GR.
ip route notify delete always

Use the **no** form of this command to disable the function of directly deleting BGP routes.
no ip route notify delete always

Use the **default** form of this command to restore the default configuration.
default ip route notify delete always

Parameter Description

Parameter	Description
N/A	N/A

Defaults The function of directly deleting BGP routes is disabled by default.

Command Mode Global configuration mode

Default Level 14

Usage Guide If the function is enabled, the BGP route deletion configuration takes effect immediately during GR to

prevent routing black hole.

Examples The following example enables/disables the function of directly deleting BGP routes during GR.

```
Ruijie(config)# ip route notify delete always
Ruijie(config)# no ip route notify delete always
```

7.16 ip route scan arp interval

Use this command to set the interval for actively sending ARP requests when ARP fails after static routing support for ARP is configured.
ip route scan arp interval *number*

Use the **no** form of this command to delete the configured interval for actively sending ARP requests and restore the default value.
no ip route scan arp interval

Use the **default** form of this command to restore the default configuration.
default ip route scan arp interval

Parameter Description

Parameter	Description
number	Interval. The value range is **5** to **120** in seconds and the default value is **5**.

Defaults The transmission interval is not configured by default. ARP requests are sent at an interval of 5 seconds by default.

Command Mode Global configuration mode

Default Level 14

Usage Guide After the static routing support for ARP is configured, when ARP fails due to a link failure or other causes, the device actively transmits ARP requests and the transmission interval can be configured. ARP requests are transmitted at an interval of 5 seconds by default.

Examples The following example configures the interval for actively sending ARP requests.

```
Ruijie(config)# ip route scan arp interval 10
Ruijie(config)# no ip route scan arp interval
```

7.17 ip route scan arp times

Use this command to set the number of times of actively sending ARP requests when ARP fails after static routing support for ARP is configured.

ip route scan arp times *number*

Use the **no** form of this command to delete the configured number of times of actively sending ARP requests and restore the default value.
no ip route scan arp times

Use the **default** form of this command to restore the default configuration.
default ip route scan arp times

Parameter Description

Parameter	Description
number	Interval. The value range is **1** to **65,535** and the default value is **65535**.

Defaults The transmission count is not configured by default. The default value is **65535**.

Command Mode Global configuration mode

Default Level 14

Usage Guide After the static routing support for ARP is configured, when ARP fails due to a link failure or other causes, the device actively transmits ARP requests and the transmission count can be configured. ARP requests are transmitted 65535 times by default.

Examples The following example configures the number of times of actively sending ARP requests.

```
Ruijie(config)# ip route scan arp times 10
Ruijie(config)# no ip route scan arp times
```

7.18 ip route static bfd

Use this command to correlate the static route with BFD. Use the **no** or **default** form of this command to restore the default setting.
ip route static bfd [**vrf** *vrf-name*] *interface-type interface-number gateway* [**source** *ip-address*]
no ip route static bfd [**vrf** *vrf-name*] *interface-type interface-number gateway* [**source** *ip-address*]
default ip route static bfd [**vrf** *vrf-name*] *interface-type interface-number gateway* [**source** *ip-address*]

Parameter description

Parameter	Description
vrf *vrf-name*	(Optional) Specifies the VRF name of the static route. By default, it is global VRF,
interface-type interface-number	Interface type and interface number.
gateway	Specifies the gateway IP address, that is, the BFD neighbor IP address. If the next hop of the static route is the neighbor, the BFD will detect whether this neighbor is

	reachable.
source *ip-address*	(Optional) The source IP address of the BFD session. If the neighbor device is multi hops away, you should specify the source IP address for the BFD session. No source IP address is specified by default.

Default configuration

The static address is not correlated with BFD by default.

Command mode

Global configuration mode.

Usage guidelines

⚠ Please make sure the BFD session parameters have been configured before executing this command.

Examples

The following example correlates the static route with BFD, and detects the reachability of path to the neighbor 172.16.0.2.

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# no switchport  // No need to perform this command on the router.
Ruijie(config-if-GigabitEthernet 0/1)# ip address 172.16.0.1 255.255.255.0
Ruijie(config-if-GigabitEthernet 0/1)# bfd interval 50 min_rx 50 multiplier 3
Ruijie(config-if-GigabitEthernet 0/1)#exit
Ruijie(config)# ip route static bfd GigabitEthernet 0/1 172.16.0.2
Ruijie(config)# ip route 10.0.0.0 255.0.0.0 GigabitEthernet 0/1 172.16.0.2
```

Related commands

N/A

Platform description

This command is not supported on Layer 2 devices.

7.19 ip route static inter-vrf

Use this command to enable packets to be forwarded over VRF instances through the static route. Use the **no** or **default** form of this command to disable this function.

ip route static inter-vrf

no ip route static inter-vrf

default ip route static inter-vrf

Parameter description

Parameter	Description
N/A	N/A

Default configuration	This function is enabled by default.
Command mode	Global configuration mode.
Usage guidelines	If the **no** form of this command is executed, packets are unable to be forwarded over VRF instances through the static route. If this command is executed and you want to use the **no** form of this command to disable such function, the following information will be displayed. `*Aug 7 10:58:34: %NSM-6-ROUTESACROSSVRF: Un-installing route [x.x.x.x/8] from global routing table with outgoing interface x/x.`
Examples	The following example disables packets to be forwarded over VRF instances through the static route. `Ruijie(config)# no ip route static inter-vrf`
Related commands	N/A
Platform description	This command is not supported on Layer 2 devices.

7.20 ip routing

Use this command to enable IP routing in the global configuration mode. Use the **no** form of this command to disable this function.

ip routing

no ip routing

Default configuration	This function is enabled by default.
Command mode	Global configuration mode.
Usage guidelines	IP routing is not necessary when the switch serves as bridge or VoIP gateway.
Examples	The following example disables IP routing. `no ip routing`
Related commands	N/A
Platform description	This command is not supported on Layer 2 devices.

7.21 ipv6 fast-reroute static route-map

Use this command to enable an IPv6 static fast reroute. Use the **no** or **default** form of this command to

restore the default setting.

ipv6 fast-reroute [**vrf** *vrf-name*] **static route-map** *route-map-name*

no ipv6 fast-reroute [**vrf** *vrf-name*]

default ipv6 fast-reroute [**vrf** *vrf-name*]

Parameter Description

Parameter	Description
vrf-name	(Optional) Name of VRF. When the name of VRF is not specified, the configuration takes effect in the global VRF.
route-map-name	Route map of static fast reroute
static	Back up the route map

Defaults Static fast reroute is not enabled by default.

Command Mode Global configuration mode

Usage Guide

The fast reroute delivers the primary route and backup route at the same time. When the primary link fails, it forwards packets by switching to the backup route, thus shortening the communication interruption time.

To improve the switching performance of fast reroute, you can enable BFD to check whether the next hop is reachable. In order to shorten the forwarding interruption time, you can configure **carrier-delay** *0* on the primary link export in the interface mode to achieve the fastest switching performance.

For static fast reroute, when the primary next hop fails and the backup next hop is valid, the backup next hop becomes the primary next hop for forwarding.

Examples

The following example configures the backup next hop of static route as 2001::1, through the interface GigabitEthernet 0/1

```
Ruijie(config)# route-map fast-reroute
Ruijie(config-route-map)# set ipv6 fast-reroute
backup-interface GigabitEthernet 0/1 backup-nexthop 2001::1
Ruijie(config-route-map)# exit
Ruijie(config)# ipv6 fast-reroute static route-map
fast-reroute
```

Platform Description This command is not supported on 2-layer devices.

7.22 ipv6 recur-route fastswitch-nexthop

Use this command to enable the fast convergence of a recursive route. Use the **no** or **default** form of this command to restore the default setting.

ipv6 recur-route fastswitch-nexthop

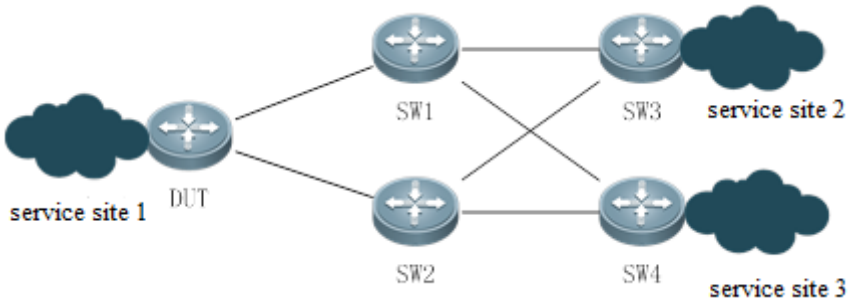
no ipv6 recur-route fastswitch-nexthop

default ipv6 recur-route fastswitch-nexthop

Parameter Description	**Parameter**	**Description**
	N/A	

Defaults Disabled by default.

Command Mode Global configuration mode



Usage Guide As shown in the figure above, DUT establishes ISIS neighbors with SW1 and SW2, SW1 and SW2 establish ISIS neighbors with SW3 and SW4, and DUT establishes IBGP neighbors with SW3 and SW4. The service site is accessed through EBGP.
The BGP route is recursively sent to the ISIS route. When the SW1 and SW3 are disconnected, the ISIS route is changed, so the GP route that depends on the ISIS route needs to be recalculated. Before the calculation result is sent to the forwarding plane, BGP traffic from the service site1 to the service site2 still goes through the disconnected link between SW1 and SW3, resulting in the flow interruption. Interruption time = link down + local ISIS learns the route deletion information + local NSM receives the ISIS routing information + calculates and delivers the BGP route to the forwarding plane + switching link, which cannot meet the requirement of switching within 1 s.
If the fast switching of recursive route is enabled, the traffic going through the disconnected link between SW1 and SW3 can be switched to other normal links within 1 s.

Examples The following example enables/disables the fast convergence of recursive route

```
Ruijie(config)# ipv6 recur-route fastswitch-nexthop
Ruijie(config)# no ipv6 recur-route fastswitch-nexthop
```

Platform Description This command is not supported on 2-layer devices.

7.23 ip static route-limit

Use this command to set the upper threshold of the static route. Use the **no** form of this command to restore the default setting.

ip static route-limit { number | **default-vrf** *number* | ***vrf*** *vrf-name number* }

no ip static route-limit [**default-vrf**] | [**vrf** *vrf-name*]

Parameter description

Parameter	Description
number	Upper threshold of static routes
default-vrf *number*	Upper threshold of default VRF static routes, range: 1-10000
vrf *vrf-name number*	Upper threshold of VRF static routes, range: 1-10000.

Default configuration The default is 1024.

Command mode Global configuration mode.

Usage guidelines The goal is to control the number of static routes. You can view the upper threshold of the configured non-default static routes with the show running config command.

Examples The following example sets the upper threshold of the static routes/default VRF static routes/VRF test static routes to 9000/2000/1000, and then restores the the default valuess.

```
Ruijie(config)#ip static route-limit ?
  <1-1000000>  Global limit value(default value: 1024)
  default-vrf  Default Routing/Forwarding instance
  vrf          VPN Routing/Forwarding instance
Ruijie(config)# ip static route-limit 9000
Ruijie(config)# ip static route-limit default-vrf  2000
Ruijie(config)# ip static route-limit vrf test 1000
Ruijie(config)# no ip static route-limit
Ruijie(config)# no ip static route-limit default-vrf
Ruijie(config)# no ip static route-limit vrf test
```

Related commands N/A

Platform description This command is not supported on Layer 2 devices.

7.24 ipv6 default-gateway

Use this command to configure the default gateway IPv6 address on 2-layer devices. Use the **no** or **default** form of this command to restore the default setting.

ipv6 default-gateway *ipv6-address*

no ipv6 default-gateway

default ipv6 default-gateway

Parameter Description

Parameter	Description

ipv6-address	Sets the default gateway IPv6 address.

Defaults No gateway IPv6 address is configured by default.

Command Mode Global configuration mode

Usage Guide When the device does not know the destination address of a packet, the device will forward the packet to the default gateway. Use the command **show ipv6 redirects to** display default gateway configuration.

Examples The following example sets the default gateway IPv6 address to 10::1.

```
Ruijie(config)# ipv6 default-gateway 10::1
```

Platform Description This command is not supported on 2-layer devices or 3-layer devices configured with the **no ip routing** command.

7.25 ipv6 route

Use this command to configure an ipv6 static route. Use the **no** form of this command to restore the default setting.

ipv6 route [vrf *vrf-name***]** *ipv6-prefix/prefix-length* {*ipv6-address* **[nexthop-vrf {***vrf-name1* | **default }]** | *interface* [*ipv6-address*[**nexthop-vrf {***vrf-name1* |**default }]**]} [*distance*] [**tag** *tag*] [**weight** *number*]

no ipv6 route [vrf *vrf-name***]** *ipv6-prefix/prefix-length* {*ipv6-address* **[nexthop-vrf {***vrf-name1* | **default }]** | *interface* [*ipv6-address*[**nexthop-vrf {***vrf-name1* |**default }]**]} [*distance*] [**tag** *tag*] [**weight** *number*]

Parameter description

Parameter	Description
network	Network address of the destination
vrf-name	Name of VRF, which must be the configured IPv6 address family multi-protocol VRF.
prefix-length	Mask length of the destination
ipv6-address	The next hop IP address of the static route
interface	(Optional) The next hop egress of the static route
vrf-name1	VRF the nexthop belongs, which must be the configured IPv6 address family multi-protocol VRF.
distance	(Optional) The administrative distance of the static route. The default is 1.
tag	(Optional) The tag value of the static route. The default is 0.
number	(Optional) The weight value of the static route, which is specified when configuring the equivalent routes, in range of 1 to 128. The sum of the weight of all equivalent paths of one route could not exceed the number of the configurable maximum equivalent paths. The weight ratio between the equivalent routes of the same route shows the flow rate between these paths.

Default configuration No IPv6 static route is configured by default.

Command mode Global configuration mode.

Usage guidelines

When the multi-protocol VRF deletes the IPv6 address family, the IPv6 static route of VRF that the route or nexthop belongs is deleted.
If the VRF of the IPv6 static route interface is not same as the nexthop's VRF, then this IPv6 static route takes no effect.
The default administrative distance of the static route is 1. Setting the administrative distance allows the learnt dynamic route to overwrite the static route. Setting the administrative distance of the static route can enable route backup, which is called floating route in this case. For example, the administrative distance of the OSPF is 110. You can set its administrative distance to 125. Then the data can switch over the static route when the route running OSPF fails.

Examples

The following example adds a static route to the destination network of 2001::/64 whose next hop is 2002::2 and administrative distance is 115.

```
ipv6 route 2001::/64 2002::2 115
```

If the static route has not a specific interface, data flows may be sent thought other interface in case of interface failure. The following example configures that data flows are sent through fastehternet 0/0 to the destination network of 2001::/64.

```
ipv6 route 2001::/64 fastethernet 0/0 2002::2
```

Related commands

Command	Description
show ipv6 route	Displays IPv6 routing table.

Platform description This command is not supported on Layer 2 devices.

7.26 ipv6 route nd-to-route delay-time

Use this command to configure the delayed redistribution of nd-to-route. Use the **no** or **default** form of this command to restore the default setting.
ipv6 route nd-to-route delay-time *time-number*
no ipv6 route nd-to-route delay-time
default ipv6 route nd-to-route delay-time

Parameter Description

Parameter	Description
time-number	Indicates the time of the delayed redistribution of nd-to-route. The unit is second, the range is 1-1000, and the default value is 0

Defaults The delayed redistribution of nd-to-route is not configured by default.

Command Mode	Global configuration mode
Usage Guide	After the delayed redistribution is configured, the redistribution will be delayed according to the specified time for the ND packet. The redistribution route of ND failure packet is immediately advertised.
Examples	The following example delays the redistribution of nd-to-route to protocol module for 10 seconds. `Ruijie(config)# ipv6 route nd-to-route delay-time 10`
Related Commands	N/A
Platform Description	This command is not supported on 2-layer devices.

7.27 ipv6 route nd-to-route interface

Use this command to enable nd-to-route on a specified interface. Use the **no** or **default** form of this command to restore the default setting.

ipv6 route nd-to-route interface *interface-name* [**ipv6-prefix** *X:X:X:X::X/<0-128>*] [**prefix-len** *masklen*]

no ipv6 route nd-to-route interface *interface-name* [**ipv6-prefix** *X:X:X:X::X/<0-128>*] [**prefix-len**]

default ipv6 route nd-to-route interface *interface-name* [**ipv6-prefix** *X:X:X:X::X/<0-128>*] [**prefix-len**]

Parameter Description

Parameter	Description
interface-name	The interface name.
X:X:X:X::X/<0-128>	Ipv6 network segment. If the nd entries match this network segment, the route is converted according to the mask specified by this network segment. If the network segment does not specify a mask, the default mask is 128.
masklen	The mask length of the nd-to-route. The range is 0 to 128, and the default value is 128. If an IPv6 network segment is specified, it is longer than the mask length of configured network segment. If no IPv6 network segment is specified, it is longer than the mask length of IPv6 address on the interface. Otherwise, the configuration fails.

Defaults	The nd-to-route on a specified interface is not configured by default.
Command Mode	Global configuration mode

Usage Guide

Please make sure that the interface is a Layer-3 interface.

If the IPv6 network segment and prefix-len are not specified, the ND learned on the default interface generates a 128-bit route. If no IPv6 network segment is specified but prefix-len is specified, ND on the interface generate the specified prefix- len. If IPv6 network segment is specified but prefix-len is not specified, the network segment generates a 128-bit route by default. If the network segment and the prefix-len are specified, the network segment is verified to match with the prefix when the ND is learned, and then the prefix-len is generated. If the network segment and prefix-len are specified, and the prefix-len of an unspecified network segment is configured, the specified interface generates the route according to its prefix-len, while the unspecified interface generates the route according to the unspecified prefix-len.

If you configure the IPv6 address of an interface before configuring the prefix-len of the interface address to generate a route with fixed-length mask, a configuration error occurs when the prefix-len is shorter than or equal to the mask of the IPv6 address. The prefix-len command fails. For example, first configure IPv6 address 10::1/64 on the interface of vlan 40, and then configure ipv6 route nd-to-route interface vlan 40 ipv6-prefix 10::1/58 prefix-len 60 in the global configuration mode, the configuration fails.

If you configure the IPv6 address of an interface before configuring the prefix-len of an unspecified network segment, a configuration error occurs when the prefix-len is shorter than or equal to the mask of any of the IPv6 addresses on the interface. The prefix-len configuration command for the unspecified network segment fails. For example, first configure IPv6 address 10::1/64 on the interface of vlan 40, and then configure ipv6 route nd-to-route interface vlan 40 prefix-len 60 in the global configuration mode, the configuration fails.

If you configure the prefix-len of an unspecified network segment before configuring the IPv6 address of this interface, syslog is displayed and the prefix-len configuration of unspecified network segment is canceled when one of the IPv6 addresses is longer than or equal to the prefix-len of the unspecified network segment. For example, first configure ipv6 route nd-to-route interface vlan 40 prefix-len 60 in the global configuration mode, and then configure address 10::1/64 on the interface of vlan 40, syslog alarm is displayed and the configuration ipv6 route nd -to-route interface vlan 40 prefix-len 60 is deleted.

If you configure the prefix-len of the specified network segment and then configure the IPv6 address of the corresponding network segment, syslog is displayed and the prefix-len configuration of the specified network segment is canceled when the IPv6 address mask of the corresponding network segment is longer than or equal to the prefix-len of the specified network segment. For example, first configure ipv6 route nd-to-route interface vlan 40 ipv6-prefix 10::1/58 prefix-len 60 in the global configuration mode, and then configure the address 10::1/64 on the interface of vlan 40, the syslog alarm is displayed and the configuration ipv6 route nd-to-route interface vlan 40 ipv6-prefix 10::1/58 prefix-len 60 is deleted.

If you configure the prefix-len of unspecified network segment and the prefix-len of the specified network segment, and then configure the IPv6 address of the interface, please check whether the mask of each IPv6 address is longer than or equal to the prefix-len of the specified/unspecified network segment. Syslog is displayed and the prefix-len configuration of specified network segment is canceled when the mask of each IPv6 address is longer than or equal to the prefix-len of the corresponding network segment. Syslog is displayed and the prefix-len configuration of unspecified

network segment is canceled when the mask of each IPv6 address is longer than or equal to the prefix-len of unspecified network segment. For example, first configure ipv6 route nd-to-route interface vlan 40 prefix-len 62 and ipv6 route nd-to-route interface vlan 40 ipv6-prefix 10::1/58 prefix-len 60, and then configure address 10::1/64 on the interface of vlan 40, the syslog alarm is displayed and two configurations are deleted.

Examples

The following example enables nd-to-route on the interface vlan 40. NDs that match 10::1/58 network segment are converted to routes with a mask length of 110 bits. NDs that match 20::1/56 network segment are converted to routes with a mask length of 128 bits. Other NDs are converted to routes with a mask length of 120 bits.

```
Ruijie(config)# ipv6 route nd-to-route interface vlan 40 prefix-len 120
Ruijie(config)# ipv6 route nd-to-route interface vlan 40 ipv6-prefix 10::1/58
 prefix-len 110
Ruijie(config)# ipv6 route nd-to-route interface vlan 40 ipv6-prefix 20::1/56
```

Common Error

The Layer-3 interface is not in up status

Platform Description

This command is not supported on 2-layer devices.

7.28 ipv6 route nd-to-route tag

Use this command to configure the tag of nd-to-route. Use the **no** or **default** form of this command to restore the default setting.

ipv6 route nd-to-route tag *tag-number*

no ipv6 route nd-to-route

default ipv6 route nd-to-route tag

Parameter Description

Parameter	Description
tag-number	Indicates the tag value. The range is 1-4294967295, and the default value is 0.

Defaults

The tag of nd-to-route is not configured by default.

Command Mode

Global configuration mode

Usage Guide

Examples

The following example configures the tag of nd-to-route

```
Ruijie(config)# ipv6 route nd-to-route tag 5
```

Related Commands N/A

Platform Description This command is not supported on 2-layer devices.

7.29 ipv6 route nd-to-route warning-ignore

Use this command to ignore the warning of nd-to-route. Use the **no** or **default** form of this command to restore the default setting.

ipv6 route nd-to-route warning-ignore

no ipv6 route nd-to-route warning-ignore

d efault ipv6 route nd-to-route warning-ignore

Parameter Description

Parameter	Description
N/A	

Defaults The function of ignoring the warning of nd-to-route is not configured by default.

Command Mode Global configuration mode

Usage Guide After you configure to ignore the warning of nd-to-route, the alarm that the same PORT ND generates the same network segment route is ignored. If this command is not configured, the warning log that the same PORT ND generates the same network segment route is printed (only once). The alarm that different ports generate the same network segment route is not controlled by this command.

Examples The following example ignores the warning of nd-to-route

```
Ruijie(config)# ipv6 route nd-to-route warning-ignore
```

Related Commands N/A

Platform Description This command is not supported on 2-layer devices.

7.30 ipv6 route static bfd

Use this command to correlate the static route with BFD. Use the **no** or **default** form of this command to restore the default setting.

ipv6 route static bfd [**vrf** *vrf-name*] *interface-type interface-number gateway* [**source** *ip-address*]

no ipv6 route static bfd [**vrf** *vrf-name*] *interface-type interface-number gateway* [**source** *ip-address*]

default ipv6 route static bfd [**vrf** *vrf-name*] *interface-type interface-number gateway* [**source** *ip-address*]

Parameter description

Parameter	Description
vrf *vrf-name*	(Optional) Specifies the VRF name of the static route. By default, it is global VRF,
interface-type interface-number	Interface type and interface number.
gateway	Specifies the gateway IP address, that is, the BFD neighbor IP address. If the next hop of the static route is the neighbor, the BFD will detect whether this neighbor is reachable.
source *ipv6-address*	(Optional) The source IP address of the BFD session. If the neighbor device is multi hops away, you should specify the source IP address for the BFD session. No source IP address is specified by default.

Default configuration

The static route is not associated with BFD by default.

Command mode

Global configuration mode.

Usage guidelines

⚠ Please make sure the BFD session parameters have been configured before executing this command.

Examples

The following example correlates the static route with BFD, and detects the reachability of path to the neighbor *2001:1::2*.

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if)# no switchport   //
Ruijie(config-if)# ip address 2001:1::1/64
Ruijie(config-if)# bfd interval 50 min_rx 50 multiplier 3
Ruijie(config-if)#exit
Ruijie(config)# ipv6 route static bfd GigabitEthernet 0/1 2001:1::2
Ruijie(config)# ipv6 route 2002::/64 GigabitEthernet 0/1 2001:1::2
```

Related commands

N/A

Platform description

This command is not supported on Layer 2 devices.

7.31 ipv6 static route-limit

Use this command to set the upper threshold of the static route. Use the **no** or **default** form of this command to restore the default setting.

Ipv6 static route-limit { number | **default-vrf** *number* | **vrf** *vrf-name number* }

no ipv6 static route-limit [**default-vrf**] | [**vrf** *vrf-name*]

default ipv6 static route-limit [**default-vrf**] | [**vrf** *vrf-name*]

Parameter Description

Parameter	Description
number	Upper threshold of static routes in the range from 1 to 1,000,000.
default-vrf *number*	Upper threshold of static routes in the range from 1 to 10,000 in default VRF scenario.
vrf *vrf-name number*	Upper threshold of static routes in the range from 1 to 10,000 in VRF scenario.

Defaults The default is 1000.

Command Mode Global configuration mode

Usage Guide The goal is to control the number of static routes. You can view the upper threshold of the configured non-default static routes with the show running config command.

Examples The following example sets the upper threshold of the global static routes to 900, the upper threshold of the global static routes to 200 in default VRF scenario, the upper threshold of the global static routes to 100 in VRF scenario and then restores the default value.

```
Ruijie(config)#ipv6 static route-limit ?
   <1-1000000>  Global limit value(default value: 1024)
  default-vrf  Default Routing/Forwarding instance
  vrf         VPN Routing/Forwarding instance
Ruijie(config)# ipv6 static route-limit 900
Ruijie(config)# ipv6 static route-limit default-vrf  200
Ruijie(config)# ipv6 static route-limit vrf test 100
Ruijie(config)# no ipv6 static route-limit
Ruijie(config)# no ipv6 static route-limit default-vrf
Ruijie(config)# no ipv6 static route-limit vrf test
```

Related Commands

Command	Description
ipv6 route	Configures the IPv6 static route.
show ipv6 route	Displays the IPv6 routing table.

Platform Description This command is not supported on 2-layer devices.

7.32 ipv6 unicast-routing

Use this command to enable the IPv6 route function of the RGOS. Use the **no** form of this command to disable this function.

ipv6 unicast-routing
no ipv6 unicast-routing

Parameter description	None
Default configuration	This function is enabled by default.
Command mode	Global configuration mode
Usage guidelines	This function can be disabled if the device is just used as the bridge-connection device or the VOIP gateway device.
Examples	The example disables the IPv6 route function of RGOS. `Ruijie# no ipv6 unicast-routing`

Related commands

Command	Description
ipv6 route	Configure the IPv6 static route
show ipv6 route	Displays the IPv6 routing table

Platform description This command is not supported on Layer 2 devices.

7.33 maximum-paths

Use this command to specify the number of equivalent routes. Use the **no** form of this command is used to restore the default setting.
maximum-paths *number*
no maximum-paths *number*

Parameter description

Parameter	Description
number	Number of equivalent routes in the range from 1 to device capacity.

Default configuration	The default value varies from products.
Command mode	Route map co
Usage guidelines	With this command executed, the number of routes for load balancing is no more than the specified number of equivalent routes. You can view the number of equivalent routes with the show running config command.

Examples

The following example sets the number of equivalent routes to 10 and then restores the default setting.

```
maximum-paths 10
no maximum-paths 10
```

7.34 maximum routes

Use this command to limit the number of routes in default VRF scenario. Use the **no** form of this command to restore the default setting.

maximum routes *limit* { *warn-threshold* | **warning-only** }

no maximum routes

Parameter Description

Parameter	Description
limit	Indicates the limitation on number of routes. If the routes number exceeds the limitation, it will be written into the routing table. Range: 1-4,294,967,295.
warn-threshold	Indicates the threshold of printing alarm. Range: 1-100.
warning-only	When the route reaches to the limited number, print log only. (The route can still be written into the core routing table.)

Defaults N/A

Command Mode Global configuration mode

Usage Guide The command is used to limit the routes running in default VRF scenario. If you want to obtain alarm only, please configure parameter **warning-only**.

Examples

The following example sets the maximum number of routes to 1,000 in default VRF scenario. An alarm log will be generated if the number exceeds 1,000.

```
Ruijie(config)# maximum routes 1000 100
```

7.35 show ip redirects

Use this command to display the default gateway IP address.

show ip redirects

Use this command to display the default gateway IP address.

show ip redirects

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Use this command to display the default gateway IP address. This command is supported on 2-layer devices or 3-layer devices with the **no ip routing** command executed.

Examples The following example displays the default gateway.

```
Ruijie# show ip redirects
Default Gateway: 192.168.195.1
```

Field	Description
Default Gateway	IP address of the default gateway.

Related Commands

Command	Description
N/A	N/A

Platform Description This command is supported on 2-layer devices and 3-layer devices with the **no ip routing** command executed.

7.36 show ip route

Use the command to display the configuration of the IP routing table.

show ip route [[**vrf** *vrf_name*] [*network* [*mask* [**longer-prefix**]] | **count** | *protocol* [*process-id*] | **weight**]]

show ip route [**vrf** *vrf-name*] [[**normal** | **ecmp** | **fast-reroute**] [*network* [*mask*]]

Parameter description

Parameter	Description
vrf *vrf_name*	(Optional) Displays the route information of the VRF.
network	(Optional) Displays the route information to the network.
mask	(Optional)Displays the route information to the network of this mask.
longer-prefix	(optional) Displays the routes that match the specified prefix.
count	(Optional)Displays the number of existent routes. (for the ECMP/WCMP route, displays one route)
protocol	(Optional) Displays the route information of specific protocol.
process-id	(Optional) Routing protocol process ID.
weight	(Optional) Displays the route information of non default weight.
normal	Displays normal routes and not equivalent routes or fast reroutes.
ecmp	Displays only equivalent routes.
fast-reroute	(Optional) Displays the master/standby route of fast reroute.

Default configuration All routes are displayed by default.

Command mode

Privileged EXEC mode/ global configuration mode/ interface configuration mode/ routing protocol configuration mode/ route map configuration mode.

Usage guidelines

This command can display route information flexibly.
This command shows all routes. To show different attributes of routes, specify normal | ecmp | fast-reroute.

Examples

The following example displays the configuration of the IP routing table.

```
Ruijie# show ip route

Codes:  C - Connected, L - Local, S - Static
        R - RIP, O - OSPF, B - BGP, I - IS-IS, V - Overflow route
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2
        SU - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
        IA - Inter area, EV - BGP EVPN, A - Arp to host
        LA - Local aggregate route
        * - candidate default
Gateway of last resort is no set
S    20.0.0.0/8 is directly connected, VLAN 1
S    22.0.0.0/8 [1/0] via 20.0.0.1
O E2 30.0.0.0/8 [110/20] via 192.1.1.1, 00:00:06, VLAN 1
R    40.0.0.0/8 [120/20] via 192.1.1.2, 00:00:23, VLAN 1
B    50.0.0.0/8 [120/0] via 192.1.1.3, 00:00:41
C    192.1.1.0/24 is directly connected, VLAN 1
C    192.1.1.254/32 is local host.
LA   1.1.1.0/24 [1/0] via 0.0.0.0, Null 0
```

Field	Description
O	Source routing protocol, which may be: C: directly connected route S: static route R: RIP route B: BGP route O: OSPF route I: IS-IS route

E2	Route type, which may be: E1: OSPF external route type 1 E2: OSPF external route type 2 N1: OSPF NSSA external type 1 N2: OSPF NSSA external type 2 IA: OSPF area internal route SU: IS-IS summary route L1: IS-IS level-1 route L2: IS-IS level-2 route IA: IS-IS area internal route
20.0.0.0/8	Network address and mask of the destination network
[1/0]	Administrative distance/metric

```
Ruijie# show ip route 30.0.0.0
Routing entry for 30.0.0.0/8
Distance 110, metric 20
Routing Descriptor Blocks:
192.1.1.1, 00:01:11 ago, via VLAN 1, generated by OSPF, extern 2
```

Field	Description
Routing Descriptor Blocks	Next hop IP address, source, update time, forwarding interface, source routing protocol and type of route information

```
Ruijie# show ip route count
--------- route info ----------
the num of active route: 5 (include ecmp: 9)
```

```
Ruijie# show ip route weight
------------[distance/metric/weight]-----------
S    23.0.0.0/8 [1/0/2] via 192.1.1.20
S    172.0.0.0/16 [1/0/4] via 192.0.0.1
```

```
Ruijie#show ip route normal

Codes:  C - Connected, L - Local, S - Static
       R - RIP, O - OSPF, B - BGP, I - IS-IS, V - Overflow route
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
```

```
       E1 - OSPF external type 1, E2 - OSPF external type 2
       SU - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       IA - Inter area, * - candidate default
Gateway of last resort is no set
S    20.0.0.0/8 is directly connected, VLAN 1
S    22.0.0.0/8 [1/0] via 20.0.0.1
O E2 30.0.0.0/8 [110/20] via 192.1.1.1, 00:00:06, VLAN 1
R    40.0.0.0/8 [120/20] via 192.1.1.2, 00:00:23, VLAN 1
B    50.0.0.0/8 [120/0] via 192.1.1.3, 00:00:41
C    192.1.1.0/24 is directly connected, VLAN 1
C    192.1.1.254/32 is local host
```

```
Ruijie#show ip route ecmp

Codes:  C - Connected, L - Local, S - Static
       R - RIP, O - OSPF, B - BGP, I - IS-IS, V - Overflow route
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       SU - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       IA - Inter area, * - candidate default
Gateway of last resort is 192.168.1.2 to network 0.0.0.0
S*   0.0.0.0/0 [1/0] via 192.168.1.2
             [1/0] via 192.168.2.2
O IA 192.168.10.0/24 [110/1] via 35.1.10.2, 00:38:26, VLAN 1
                      [110/1] via 35.1.30.2, 00:38:26, VLAN 3
```

```
Ruijie#show ip route fast-reroute

Codes:  C - Connected, L - Local, S - Static
       R - RIP, O - OSPF, B - BGP, I - IS-IS, V - Overflow route
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       SU - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       IA - Inter area, * - candidate default
Status codes: m - main entry, b - backup entry, a – active entry

Gateway of last resort is 192.168.1.2 to network 0.0.0.0
S*   0.0.0.0/0 [ma] via 192.168.1.2
             [b] via 192.168.2.2
O IA 192.168.10.0/24 [m] via 35.1.10.2, 00:38:26, VLAN 1
                   [ba]  via 35.1.30.2, 00:38:26, VLAN 3
```

```
Ruijie# show ip route fast-reroute 30.0.0.0
Routing entry for 30.0.0.0/8
```

```
Distance 110, metric 20
Routing Descriptor Blocks:
[m] 192.1.1.1, 00:01:11 ago, via VLAN 1, generated by OSPF, extern 2
[ba]192.1.1.1, 00:01:11 ago, via VLAN 1, generated by OSPF, extern 2
```

7.37 show ip route recursive

Use this command to display the IP route recursive information

show ip route [[**vrf** *vrf_name*] **recursive** *A.B.C.D/<0-32>*

Parameter Description

Parameter	Description
vrf *vrf-name*	(Optional) Displays the route information of the specified VRF. The default is global VRF.
A.B.C.D/<0-32>	Network address/mask

Command Mode

Privileged EXEC mode

Usage Guide

When the user checks the recursive information of an IP route, all reachable routes are displayed based on the longest match.

Examples

The following displays the result of **show ip route recursive 50.1.1.1/32** command

```
Ruijie(config)# show ip route recursive 50.1.1.1/32

Codes:  C - Connected, L - Local, S - Static
        R - RIP, O - OSPF, B - BGP, I - IS-IS, V - Overflow route
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2
        SU - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
        IA - Inter area, EV - BGP EVPN, * - candidate default

S      50.1.1.1/32 [1/0] via 50.1.3.2
O IA   50.1.1.0/24 [m] via 35.1.10.2, 00:38:26, VLAN 1
S*     0.0.0.0/0 is directly connected, Null 0
```

Field	Description
O	Source routing protocol, which may be C: direct route; L: local route; S: static route; R: RIP route; B: BGP route; O: OSPF route;

	I : IS-IS route.
E2	Route type, which may be E1: OSPF external route type 1; E2: OSPF external route type 2; N1: OSPF NSSA external route type 1; N2: OSPF NSSA external route type 2; SU: IS-IS summary route; L1: IS-IS level 1 route; L2: IS-IS level 2 route; IA: internal route.
50.1.1.1/32	Network address and mask of the destination network
[1/0]	Administrative distance/metric
50.1.3.2	IP address of next hop
00:38:26	Lifetime of protocol route
VLAN 1	Forwarding interface of next hop
Routing Descriptor Blocks	Displays the next hop IP address, route source, update time, interface, source routing protocol, type, and BGP community and other attributes

Related Commands N/A

Platform Description This command is not supported on 2-layer devices.

7.38 show ip route static bfd

Use this command to display the IP route correlated BFD information

show ip route [[**vrf** *vrf_name*] **static bfd**

Parameter description

Parameter	Description
vrf *vrf-name*	(Optional) Displays route information of the specified VRF. The default is global VRF.

Default configuration N/A

Command mode Privileged EXEC mode.

Usage guidelines Use this command to display the IP route correlated BFD information

Examples The following example displays the IP route correlated BFD information,

```
Ruijie(config)#show ip route static bfd
```

```
S    10.0.0.0/8 via 100.100.100.25, GigabitEthernet 0/3, BFD state is
Up
S    20.0.0.0/8 via 200.100.100.25, GigabitEthernet 0/4, BFD state is
Admin
```

Field	Description
S	Static route
BFD state	State of the static route correlated BFD.

Related commands N/A

Platform description This command is not supported on Layer 2 devices.

7.39 show ip route summary

Use this command to display the statistical information about one routing table.

show ip route [**vrf** *vrf_name*] **summary**

Use this command to display the statistical information about all routing tables.

show ip route summary all

Parameter Description	Parameter	Description
	vrf-name	VRF name

Defaults N/A

Command Mode Privileged EXEC mode

Usage guideline N/A

Examples

The following example displays the statistics of the global routing table.

```
Ruijie# show ip route summary

Codes:  NORMAL - Normal route  ECMP - ECMP route  FRR - Fast-Reroute route


    Memory: 2000 bytes

Entries: 22 , based on route prefixes

Entries: 29 , based on route nexthops

                    NORMAL  ECMP    FRR     TOTAL

         Connected  3       0       0       3

         Static     2       1       1       4

         RIP        1       2       1       4

         OSPF       2       1       1       4

         ISIS       1       2       0       3

         BGP        2       1       1       4

         TOTAL       11      7       4       22
```

The following example displays the statistics of all routing tables.

```
Ruijie# show ip route summary all

Codes:  NORMAL - Normal route  ECMP - ECMP route  FRR - Fast-Reroute route


IP routing table count:2

Total

     Memory: 4000 bytes

     Entries: 44 , based on route prefixes

    Entries: 44 ,  based on route nexthops


                    NORMAL  ECMP    FRR     TOTAL

         Connected  6       0       0       6

         Static     4       2       2       8

         RIP        2       4       2       8

         OSPF       4       2       2       8

         ISIS       2       4       0       6

         BGP        4       2       2       8

         TOTAL      22      14      8       44


Global

     Memory: 2000 bytes

     Entries: 22 , based on route prefixes
```

Field	Description
NORMAL	Type of the table entries. Value: NORMAL: common routes (not ECMP or FRR); ECMP: equivalent route; FRR: fast reroute; TOTAL: total
Memory	Memory occupied by the table.
Entries: x，based on route prefixes	Number of entries based on prefix
Entries: x，based on route nexthops	Number of entries based on next-hop
Connected	Protocol type. Value: Connected: direct connection; Static: static; RIP: RIP; OSPF: OSPF; ISIS: ISIS; BGP: BGP; TOTAL: total
IP routing table count	Number of routing tables
Global	Name of routing table. Value: Global: default VRF VRF1: VRF name Total: all VRF routing tables

7.40 show ip route track-table

Use this command to display the IP route correlated Track information.

show ip route [[**vrf** *vrf_name*] **track-table**

Parameter Description

Parameter	Description
vrf *vrf_name*	(Optional) Displays the route information of the specified VRF name. The default is global VRF,

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Use this command to display the IP route correlated Track information.

Examples The following example displays the IP route correlated Track information.

```
Ruijie(config)#show ip route track-table
```

```
ip route 10.0.0.0 255.0.0.0 GigabitEthernet 0/0 track 2 state is [up]
ip route 20.0.0.0 255.0.0.0 GigabitEthernet 0/0  2 track 3 state is [down]
```

:

Field	Description
track	Track target index
state	Track target state

Related Commands

Command	Description
N/A	N/A

Platform Description This command is not supported on 2-layer devices.

7.41 show ipv6 redirects

Use this command to display the IPv6 default gateway IP address.

show ipv6 redirects

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Examples

The following example displays the default gateway IPv6 address.

```
Ruijie# show ipv6 redirects
Default Gateway: 10::1
```

Field	Description
Default Gateway	IPv6 address of the default gateway

Related Commands

Command	Description
N/A	N/A

Platform Description This command is supported on 2-layer devices and 3-layer devices with the **no ip routing** command executed..

7.42 show ipv6 route

Use the command to display the configuration of the IPv6 routing table.

show ipv6 route [vrf *vrf-name***]** [[*network / prefix-length*] | **summary** | *protocol***| weight**]

Parameter description

Parameter	Description
network	(Optional) Displays the route information to the network.
vrf-name	VRF name.
summary	(Optional)Displays the classified statistics of the number of ipv6 routes.
protocol	((Optional) Displays the route information of specific protocol.
weight	(Optional) Displays the non-default-weight routes only.

Default configuration

All routes are displayed by default.

Command mode

Privileged EXEC mode/ global configuration mode, interface configuration mode/ routing protocol configuration mode/ route map configuration mode.

Usage guidelines

Use this command to display route information flexibly.

Examples

The following example displays the output of this command.

```
Ruijie(config)# show ipv6 route

IPv6 routing table -  Default - 7 entries
Codes:  C - Connected, L - Local, S - Static
       R - RIP, O - OSPF, B - BGP, I - IS-IS, V - Overflow route
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type
2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       SU - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       IA - Inter area

C     10::/64  via Loopback 1, directly connected
L     10::1/128  via Loopback 1, local host
S     20::/64  [20/0] via 10::4, Loopback 1C
C     FE80::/10 via Null 0, directly connected
C     FE80::/64  via Loopback 1, directly connected
L     FE80::2D0:F8FF:FE22:33AB/128  via Loopback 1, local host
```

Field	Description

O	Source routing protocol, which may be: C: directly connected route S: static route R: RIP route B: BGP route O: OSPF route I: IS-IS route
E2	Route type, which may be: E1: OSPF external route type 1 E2: OSPF external route type 2 N1: OSPF NSSA external type 1 N2: OSPF NSSA external type 2 IA: OSPF area internal route SU: IS-IS summary route L1: IS-IS level-1 route L2: IS-IS level-2 route IA: IS-IS area internal route
20::/64	Network address and mask of the destination network
[20/0]	Administrative distance/metric

Related commands

Command	Description
ipv6 route	Configures the IPv6 static route.

Platform description This command is not supported on Layer 2 devices.

7.43 show ip route static bfd

Use this command to display the IPv6 route correlated BFD information

show ipv6 route [[**vrf** *vrf_name*] **static bfd**

Parameter description

Parameter	Description
vrf *vrf-name*	(Optional) Displays the route information of the designated VRF name of the static route. The default is global VRF,

Default configuration N/A

Command mode Privileged EXEC mode.

Usage guidelines Use this command to display the IPv6 route correlated BFD information.

Examples

The following example displays the IPv6 route correlated BFD information.

```
Ruijie(config)#show ip route static bfd
S    25::/64 via 100::25, GigabitEthernet 0/3, BFD state is Up
S    26::/64 via 200::25, GigabitEthernet 0/4, BFD state is Admin
```

Field	Description
S	Static route
BFD state	State of the static route associated BFD

Related commands N/A

Platform description This command is not supported on Layer 2 devices.

7.44 show ipv6 route summary

Use this command to display the statistics of the IPv6 routing table of a specified VRF.

show ipv6 route [**vrf** *vrf-name*] **summary**

Use this command to display statistics of all IPv6 routing tables.

show ipv6 route summary all

Parameter description

Parameter	Description
vrf-name	(Optional) VRF name. If no VRF name is specified, statistics of the IPv6 routing table of the global VRF are displayed. .

Default configuration N/A

Command mode Privileged EXEC mode.

Usage guidelines N/A

Examples

The following example displays statistics of IPv6 routing table of the global VRF.

```
Ruijie#show ipv6 route summary
IPv6 routing table name is -  Default(0) global scope - 5 entries
IPv6 routing table default maximum-paths is 32
Local          2
Connected      3
Static         0
PIP           0
OSPF           0
BGP           0
------------------------
Total          5
```

The following example displays t statistics of all IPv6 routing tables.

```
Ruijie#show ipv6 route summary
IPv6 routing table name is -  Default(0) global scope - 5 entries
IPv6 routing table default maximum-paths is 32
Local          2
Connected      3
Static         0
PIP           0
OSPF          0
BGP           0
------------------------
Total          5
```

Field	Description
Memory	The memory size occupied by the current routing table.
Entries	The entries in the current routing table (based on the entry prefix instead of the next hop entry.)
Connected	Describes the protocol type of the entry. The field can be; Connected: Connected route entry. Static: Static route entry. RIP: RIP route entry. OSPF: OSPF route entry. ISIS: ISIS route entry. BGP: BGP route entry. TOTAL: Total number of all protocol entries.
IPv6 routing table count	The number of the routing tables.
Global	The name of the current routing table. The field can be: Global : Global (The default VRF) VRF1: VRF name. TOTAL: All VRF routing table summary.

Related commands

Command	Description
N/A	N/A

Platform description This command is not supported on Layer 2 devices.

8 Protocol-independent Configuration Commands

8.1 accept-lifetime

Use this command in the encryption key configuration mode to specify the lifetime of an encryption key in its receiving direction. Use the no form of this command to restore the default value.

accept-lifetime *start-time* {**infinite** | *end-time* | **duration** *seconds*}

no accept-lifetime

Parameter description

Parameter	Description
start-time	Start time of the lifetime. The syntax is as follows: *hh:mm:ss month date year* *hh:mm:ss date month year* ● hh—hour ● mm—minute ● ss—second ● month—month ● date—day ● year—year The default start time is Jun 1, 1993, which is also the earliest start time available.
infinite	Indicates that the encryption key is valid for ever.
end-time	*End time of the encryption key. It must be later than the start time.*
duration *seconds*	Duration of the encryption key after the start time. The value ranges from 1 to 2147483646.

Default infinite

Command mode Encryption key configuration mode

Usage guideline Use this command to specify the lifetime of an encryption key in its receiving direction.

Examples The following example configures the lifetime from 0:00 on September 9, 2000 to 0:00 on October 12, 2011.

```
Ruijie(config)# key chain ripkeys
```

```
Ruijie(config-keychain)# key 1
Ruijie(config-keychain-key)#accept-lifetime 00:00:00 Sep 9 2000 00:00:00 Dec
12 2011
```

Related command

Command	Description
-	-

Platform description -

8.2 ip as-path access-list

Use this command to configure an autonomous system (AS) path filter using a regular expression. Use the **no** form of this command to remove the AS path filter using a regular expression.

ip as-path access-list *path-list-num* { **permit** | **deny** } *regular-expression*

no ip as-path access-list *path-list-num* [{ **permit** | **deny** } *regular-expression*]

Parameter description

Parameter	Description
path-list-num	Specifies the AS-path access-list number. The range is from 1 to 500.
permit	Permits advertisement based on matching conditions.
deny	Denies advertisement based on matching conditions.
regular-expression	Regular expression that defines the AS-path filter. The expression length range is from 1 to 255 characters.

Default By default, no AS path filter using a regular expression is configured.

Command mode Global configuration mode

Usage guideline N/A

Examples The following example configures an AS path filter matching the path which contains AS number 123 only.

```
Ruijie(config)# ip as-path access-list 105 deny ^123$
```

Related command

Command	Description
-	-

Platform description -

8.3 ip community-list

Use this command to define a standard or expanded community list and control access to it. Use the **no** form of this command to remove the setting.

ip community-list { *community-list-number* **| standard** *community-list-name* } { **permit | deny** } [{ *community-list-number* | **internet** | **local-AS** | **no-advertise** | **no-export** | **gshut**}]

ip community-list { *community-list-number* | **expanded** *community-list-name* } { **permit | deny** } [*regular-expression*]

Parameter description

Parameter	Description
community-list-name	Name of the community list.
standard	Indicates standard community list numbered in 1 to 99.
expanded	Indicates expanded community list numbered in 100 to 199.
permit	Permits access to the community list.
deny	Denies access to the community list.
community-number	Community number in the form of AA:NN(AS number/2-byte numerical) in the range of 1 to 255 characters. It may also be one of the following value: Internet: Indicates the Internet community. All paths belong to this community. no-export: Indicates that this path will not be advertised to any EBGP peers. no-advertise: Indicates that this path will not be advertised to any BGP peers. local-as: Indicates that this path will not be advertised to out of the AS. When AS confederation is configured, this path will not be advertised to other ASs or sub-ASs.
gshut	Indicates the route is advertised by a gracefully shutdown neighbor.

Default configuration None

Command Global configuration mode.

mode

Usage guidelines This command is used to define the community list for BGP.

Examples

```
Ruijie(config)# ip community-list standard 1 deny 100.20.200.20
Ruijie(config)# ip community-list standard 1 permit internet
```

Related commands

Command	Description
match community	Match the community list.
set community-list delete	Remove the community value of the BGP path according to the community list.
show ip community-list	Show the community list information.

8.4 ip extcommunity-list

Use this command to create an extcommunity list and add an entry to the list. Use the **no** form of this command to remove the setting.

ip extcommunity-list {*expanded-list* | **expanded** *list-name* } { **permit | deny** } [*regular-expression*]

ip extcommunity-list {*standard-list* **| standard** *list-name* } { **permit | deny** } [**rt** *value*] [**soo** *value*]

no ip extcommunity-list {*expanded-list* **| expanded** *list-name* **|** *standard-list* **| standard** *list-name* }

Use this command to create an extcommunity list and enter ip excommunity-list configuration mode. Use the **no** form of this command to remove the setting.

ip extcommunity-list {*expanded-list* | **expanded** *list-name*| *standard-list* | **standard** *list-name* }

no ip extcommunity-list {*expanded-list* | **expanded** *list-name* | *standard-list* | **standard** *list-name*}

Parameter description

Parameter	Description
expand-list	Indicates an extended extcommunity list, ranging from 100 to 199. One extcommunity list may contain multiple rules.
standard-list	Indicates a standard extcommunity list, ranging from 1 to 99. One extcommunity list may contain multiple rules.
expanded *list-name*	Indicates the name of an extended extcommunity, comprising not more than 32 characters. When using this parameter, you enter the extcommunity list configuration mode.
standard *list-name*	Indicates the name of a standard extcommunity list, comprising not more than 32 characters. When using this parameter, you enter the extcommunity list configuration mode.
permit	Defines an extcommunity rule for permitting.
deny	Defines an extcommunity rule for denying.

regular-expression	(optional) Defines a matching template that is used to match an extcommunity.
sequence-number	(Optional) Defines the sequence number of a rule, ranging from 1 to 2,147,483,647. If no sequence number is specified, the sequence number automatically increases by 10 when a rule is added by default. The initial number is 10.
rt	(Optional) Sets the RT attribute value. This command can be used only for the standard extcommunity configuration, but not for the extended extcommunity configuration.
soo	(Optional) Sets the SOO attribute value. This command can be used only for the standard extcommunity configuration, but not for the extended extcommunity configuration.
value	Indicates the value of an extended community (extend_community_value).

Default It is disabled by default.

Command mode Global configuration mode and ip extcommunity-list configuration mode.

Usage guidelines This command is used to define the extcommunity list.

Examples

1.The following example defines an ip extcommunity-list.

```
Ruijie(config)# ip extcommunity-list 1 permit rt 100：1
Ruijie(config)# ip extcommunity-list standard aaa permit rt
100：2
Ruijie(config)# ip extcommunity-list expanded ext1 permit 200：[0~9][0~9]
```

2. The following example displays how to use ip extcommunity.

```
Ruijie(config)# route-map rt_in_filter
Ruijie(config-route-map)# match extcommunity 1
Ruijie(config-route-map)# match extcommunity ext1
Ruijie(config)# router bgp 100
Ruijie(config-router)# address-family vpn
Ruijie(config-router-af)#neighbor 3.3.3.3 send-community extended
Ruijie(config-router-af)#neighbor 3.3.3.3 route-map rt_in_filter in
```

8.5 ip prefix-list

Use this command to create a prefix list or add an entry to the prefix list. Use the **no** form of this command to remove the prefix list or an entry.

ip prefix-list *prefix-list-name* [**seq** *seq-number*] { **deny** | **permit** } *ip-prefix* [**ge** *minimum-prefix-length*][**le** *maximum-prefix-length*]

no ip prefix-list *prefix-list-name* [**seq** *seq-number*] { **deny** | **permit** } *ip-prefix* [**ge** *minimum-prefix-length*][**le** *maximum-prefix- length*]

Parameter description

Parameter	Description
prefix-list-name	Name of the prefix list
seq-number	Sequence number of an entry in the range of 1 to 2147483647. When you execute this command to add an entry without a sequence number, the system allocates a default sequence number for the entry. The default sequence number of the first entry is 5. Every subsequential entry without a sequence number uses the time of 5 larger than the previous sequence number as the default sequence number.
deny	Deny the route matching the prefix list.
permit	Permit the route matching the prefix list.
ip-prefix	Network address and mask. Network address can be any valid IP address and the mask length is in the range of 0 to 32.
minimum-prefix-length	(Optional) Minimum length of the prefix (the starting length) Note: “ge” indicates the operation of “larger than” and “equivalent to”.
maximum-prefix-length	(Optional) Maximum length of the prefix (the ending length) Note: “le” indicates the operation of “less than” and “equivalent to”.

Default configuration

None

Command mode

Global configuration mode.

Usage guidelines

The ip prefix-list command configures the prefix list, with the permit or deny keyword to determine the action in case of matching.

You can execute this command to define an exact match, or use “ge” or “le” to define a range match for a prefix for flexible configuration. “ge” indicates the range of

minimum-prefix-length to 32; “le” indicates the range of the mask length of the IP prefix to maximum-prefix-length; “ge” and “le” indicates the range of minimum-prefix-length to maximum-prefix-length, namely, mask length of IP prefix < minimum-prefix-length < maximum-prefix-length <=32.

Examples

The following example filters the RIP routes the OSPF redistributes by the destination IP address following the rule defined in the associated IP prefix list, for example, redistribute the routes whose destination IP address is in the range 201.1.1.0/24.

```
Ruijie# configure terminal
Ruijie(config)# ip prefix-list pre1 permit 201.1.1.0/24
Ruijie(config)# router ospf
Ruijie(config-router)# distribute-list prefix pre1 out rip
Ruijie(config-router)# end
```

8.6 ip prefix-list description

Use this command to add the description of a prefix list. Use the **no** form of this command to delete the description.

ip prefix-list *prefix-list-name* **description** *description-text*

Parameter description

Parameter	Description
prefix-list-name	Name of the prefix list
description-text	Description of the prefix list

Default configuration

No description is added for a prefix list, by default.

Command mode

Global configuration mode

Examples

The example below adds the description for the prefix list:

```
Ruijie# configure terminal
Ruijie(config)# ip prefix-list pre description Deny routes from Net-A
```

8.7 ip prefix-list sequence-number

Use this command to enable sort function for a prefix list. Use the **no** form of this command to disable the sort function.

ip prefix-list sequence-number

Parameter description	Disabled
Default configuration	No sequence number is added for a prefix list, by default.
Command mode	Global configuration mode

Examples	The example below adds a sequence number for the prefix list:
	`Ruijie# configure terminal`
	`Ruijie(config)# ip prefix-list pre description deny routes from Net-A`

Related commands

Command	Description
ip prefix-list	Configure the prefix list.

Platform description N/A

8.8 ipv6 prefix-list

Use this command to create an IPv6 prefix list or add an entry in the prefix list. Use the **no** form of this command to delete an IPv6 prefix list or an entry in the prefix list.

Ipv6 prefix-list *prefix-list-name***[seq** *seq-number***] { deny | permit}** *ipv6-prefix* **[ge** *minimum-prefix-length***][le** *maximum-prefix- length***]**

no ipv6 prefix-list *prefix-list-name***[seq** *seq-number***] { deny | permit}** *ipv6-prefix* **[ge** *minimum-prefix- length***][le** *maximum-prefix- length***]**

Parameter description

Parameter	Description
prefix-list-name	Name of the prefix list
seq-number	Sequence number of an entry in the prefix list. Its range is 1 to 4294967294. If the sequence number is not specified in this command, the system will allocate a default one for the entry. The default sequence number of the first entry is 5, and that of each subsequent one is the product of adding 5 to the sequence number of the proceeding entry.
permit	Permit the access to the matching result.
deny	Deny the access to the matching result.
ipv6-prefix	Network address and its mask. The network address can be any valid IP address. The mask can be 0 to 32 characters.
minimum-prefix-length	(Optional) Minimum length of the prefix (the starting length) Note: “ge” indicates the operation of “larger than” and “equivalent to”.
maximum-prefix-length	(Optional) Maximum length of the prefix (the ending length) Note: “le” indicates the operation of “less than” and “equivalent to”.

Default configuration

No prefix list is created.

Command mode

Global configuration mode

Usage guideline

The ipv6 prefix-list command configures the prefix list, with the permit or deny keyword to determine the action in case of matching.
You can execute this command to define an exact match, or use “ge” or “le” to define a range match for a prefix for flexible configuration. “ge” indicates the range of minimum-prefix-length to 128; “le” indicates the range of the mask length of the IP prefix to maximum-prefix-length; “ge” and “le” indicates the range of minimum-prefix-length to maximum-prefix-length, namely, Ipv6-prefix mask length < minimum-prefix-length < maximum-prefix-length <= 128

Examples

The following example filters the RIP routes the OSPF redistributes by the destination IP address following the rule defined in the associated IP prefix list, for example, redistribute the routes whose destination IP address is in the range 2222::/64.

```
Ruijie# configure terminal
Ruijie(config)# ipv6 prefix-list pre1 permit 2222::64
Ruijie(config)# ipv6 router ospf
Ruijie(config-router)# distribute-list prefix pre out rip
Ruijie(config-router)# end
```

8.9 ipv6 prefix-list description

Use this command to add the description of an IPv6 prefix list. Use the **no** form of this command to delete the description.

ipv6 prefix-list *prefix-lis-name* **description** *description-text*

no ipv6 prefix-list *prefix-lis-name* **description** *description-text*

Parameter description

Parameter	Description
prefix-lis-name	Name of the ipv6 prefix list
description-text	Description of the ipv6 prefix list

Default configuration No description is added for an IPv6 prefix list, by default.

Command mode Global configuration mode

Examples The example below adds the description for the prefix list:

```
Ruijie# configure terminal
Ruijie(config)# ipv6 prefix-list pre description Deny routes from Net-A
```

Related commands

Command	Description
ipv6 prefix-list	Configure the IPv6 prefix list.

8.10 ipv6 prefix-list sequence-number

Use this command to enable the sorting function for an IPv6 prefix list. Use the **no** form of this command to remove the settings.

ipv6 prefix-list sequence-number

no ipv6 prefix-list sequence-number

Parameter description Disabled.

Default configuration No sequence number is added for a prefix list, by default.

Command mode Global configuration mode

Examples The example below adds a sequence number for the prefix list:

```
Ruijie# configure terminal
Ruijie(config)# ipv6 prefix-list pre description Deny routes from Net-A
```

Related commands

Command	Description
ipv6 prefix-list	Configure the IPv6 prefix list.

8.11 key

Use this command to define an encryption key and enter the encryption key chain configuration mode. Use the no form of this command to delete it.

key *key-id*

no key *key-id*

Parameter description

Parameter	Description
key-id	Key ID, ranging from 0 to 2147483647.

Default: No encryption key is configured.

Command mode: Encryption key chain configuration mode.

Usage guideline: Use this command to define an encryption key.

Examples: The following example configures encryption key chain ripkeys and key 1.

```
Ruijie(config)# key chain ripkeys
Ruijie(config-keychain)# key 1
```

Related command

Command	Description
-	-

Platform description: -

8.12 key chain

Use this command to define a key chain and enter the key chain configuration mode. Use the no form of this command to delete it.

key chain *key-chain-name*

no key chain *key-chain-name*

Parameter description

Parameter	Description
key-chain-name	Key chain name.

Default No key chain is configured.

Command mode Global configuration mode.

Usage guideline

For a key chain to take effect, you need to configure at least one key.

Examples The following example configures key chain ripkeys and enters the key chain configuration mode.

```
Ruijie(config)# key chain ripkeys
```

Related command

Command	Description
-	-

Platform description -

8.13 key-string

Use this command to specify a key string. Use the no form of this command to delete it.

key-string [**0**|**7**] *text*

no key-string

Parameter description

Parameter	Description
0	Use plaintext.
7	Use encryption.
text	Authentication string.

Default No key string is configured.

Command mode Encryption key configuration mode.

Usage guideline Use this command to specify a key string.

Examples The following example configures key chain ripkeys, key 1 and the key string abc:

```
Ruijie(config)# key chain ripkeys
Ruijie(config-keychain)# key 1
Ruijie(config-keychain-key)#key-string abc
```

Related command	Command	Description
	-	-

Platform description -

8.14 match as-path

Use this command to redistribute the routes of AS_PATH attribute permitted by the access list in the route map configuration mode. Use the **no** form of this command to remove the setting.

match as-path *as-path-acl-list-num* [*as-path-acl-list-num.....*]

no match as-path *as-path-acl-list-num* [*as-path-acl-list-num.....*]

Parameter description	Parameter	Description
	as-path-acl-list-num	ACL number, in the range of 1 to 500.
	access-list-name	Name of the access list

Default configuration None.

Command mode Route map configuration mode.

Usage guidelines The match as-path can be followed by an access list number or name.
One or more match or set commands can be executed to configure one route map. If the match command is not used, all the routes will be matched. If the set command is not used, no operation will be performed.

Examples

```
!
route-map ROUTEMAP2IBGP
match as-path 20 30
```

Related commands	Command	Description
	match community	Match the community.

match metric	Match the metric.
match origin	Match the source of routes.
set as-path prepend	Set the AS_PATH attribute of redistributed routes
set metric	Set the metric.
set metric-type	Set the metric type.

8.15 match community

Use this command to redistribute the routes matching the Community attribute permitted by the ACL in the route map configuration mode. Use the **no** form of this command to remove the setting.

match community { *community-list-number* | *community-list-name*} [**exact-match**] [{*community-list-number* | *community-list-name*} [**exact-match**] …]

no match community { *community-list-number* | *community-list-name*} [**exact-match**] [{ *community-list-number* | *community-list-name*} [**exact-match**] …]

Parameter description

Parameter	Description
community-list-number	Number of the standard community list in the range 1 to 99. Number of the extended community list in the range of 100 to 199
communitys-list-name	Name of the community list in the range of less than 80 characters
exact-match	Match the community list exactly.

Default configuration None.

Command mode Route map configuration mode.

Usage guidelines

The match community can be followed by more than one community list number or name, but the total of community lists and names should not be greater than 6.

Each exact-match applies to only the previous list, not all the lists.

One or more match or set commands can be executed to configure one route map. If the match command is not used, all the routes will be matched. If the set command is not used, no operation will be performed.

Examples

```
ip community-list 1 permit 100:2 100:30
route-map set lopref
match community 1 exact-match
set local-preference 20
```

Related

Command	Description

commands		
	match as-path	Match the AS_PATH attribute.
	match metric	Match the metric.
	match origin	Match the source.
	set as-path prepend	Set the AS_PATH attribute.
	set metric	Set the metric.
	set metric-type	Set the metric type.

8.16 match extcommunity

Use this command to define the match rule for the BGP extcommunity. Use the no form of this command to cancel the setting.

match extcommunity { *standard-list-number* | *standard-list-name* | *expanded-list-num* | *expanded-list-name* }

no match extcommunity { *standard-list-number* | *standard-list-name* | *expanded-list-num* | *expanded-list-name* }

Parameter description

Parameter	Description
standard-list-number	Standard extcommunity list number, ranging from 1 to 99. An extcommunity list may contains multiple excommunity values.
standard-list-name	Standard excommunity name. An extcommunity list may contains multiple excommunity values.
expanded-list-num	Expanded extcommunity list number, ranging from 100 to 199. An extcommunity list may contains multiple excommunity values.
expanded-list-name	Expanded excommunity name. An extcommunity list may contains multiple excommunity values.

Default The rule is not defined in the associated route map.

Command mode Route map configuration mode.

Usage guideline There are the following scenarios for a route map with an extcommunity:

1. The route map associated with **import map** uses the RT attribute to filter imported VRF routes**.**

2. The route maps associated with **neighbor route-map in** and **neighbor route-map out** are configured in the BGP VPNv4 address family mode and use the RT attribute to filter VPNv4 routes sent to or by BGP peers.

Examples 1. Define two extcommunity:

```
Ruijie(config)# ip extcommunity-list 1 permit rt 100: 1
Ruijie(config)# ip extcommunity-list 1 permit rt 100: 2
```

2. Define match rules in the route map:

```
Ruijie(config)# route-map rt
Ruijie(config-route-map)# match extcommunity 1
```

3. Use the route map.

```
Ruijie(config)# router bgp 100
Ruijie(config-router)# address-family vpnv4
Ruijie(config-router-af)# neighbor 3.3.3.3 route-map rt in
```

Related command

Command	Description
ip extcommunity-list	Create an extcommunity list.
show ip extcommunity-list	Show an extcommunity list.

Platform description -

8.17 match interface

Use **match interface** command to redistribute the routes whose next hop is the specified interface. Use the **no** form of this command to remove the setting.

match interface *interface-type interface-number* [*…interface-type interface-number*]

no match interface *[interface-type interface-number* [*…interface-type interface-number*]]

Parameter description

Parameter	Description
interface-type	Interface type
interface-number	Interface number

Default configuration None.

Command mode Route map configuration mode.

Usage guidelines

This command can be followed by multiple interfaces.

You can redistribute the routes from one routing process to another routing process. For example, you can redistribute the route in the OSPF routing domain and then advertise it to the RIP routing domain, and vice versa. The mutual route redistribution can be implemented between all the IP routing protocols.

For route redistribution, route maps are usually used to control the mutual route redistribution between two routing domains.

One or more match or set commands can be executed to configure a route map. If the match command is not used, all the routes will be matched. If the set command is not used,

no operation will be performed.

Examples

The route map can be configured very flexibly for route redistribution and policy-based routing. No matter how the route map is used, the configuration principle is the same, except that different command sets are used. Even if it is used on the route redistribution, different routing protocols can use different commands with the route map.
The following example redistributes the RIP route with the next hop of fastethernet 0/0 in the OSPF routing protocol.

```
router ospf
redistribute rip subnets route-map redrip
network 192.168.12.0 0.0.0.255 area 0

route-map redrip permit 10
match interface fastethernet 0/0
```

Related commands

Command	Description
match ip address	Match the address in the access list.
match ip next-hop	Match the next-hop IP address in the access list.
match ip route-source	Match the source IP address in the access list.
match metric	Match the metric.
match route-type	Match the route type.
match tag	Match the tag.
set metric	Set the metric.
set metric-type	Set the metric type.
set tag	Set the tag.

8.18 match ip address

Use **match ip address** command to redistribute the routes matching the IP address permitted by the ACL or the prefix list. Use the **no** form of this command to remove the setting.

match ip address {*access-list-number* [*access-list-number...* | *access-list-name...*] |*access-list-name* [*access-list-number...*|*access-list-name*] | **prefix-list** *prefix-list-name [prefix-list-name...*]}

no match ip address [*access-list-number* [*access-list-number...* | *access-list-name...*] |*access-list-name* [*access-list-number...*|*access-list-name*] | **prefix-list** *prefix-list-name [prefix-list-name...*]]

Parameter description

Parameter	Description
access-list-number	Number of the access list
access-list-name	Name of the access list
prefix-list *prefix-list-name*	Specify the prefix list to match.

Default configuration

None.

Command mode

Route map configuration mode.

Usage guidelines

Multiple access list numbers or names may follow match ip address.
You can redistribute the routes from one routing process to another routing process. For example, you can redistribute the route in the OSPF routing domain and then advertise it to the RIP routing domain, and vice versa. The mutual route redistribution can be implemented between all the IP routing protocols.
For route redistribution, route maps are usually used to control the mutual route redistribution between two routing domains.
One or more match or set commands can be executed to configure a route map. If the match command is not used, all the routes will be matched. If the set command is not used, no operation will be performed.
The route map can be configured very flexibly for route redistribution and policy-based routing. No matter how the route map is used, the configuration principle is the same, except that different command sets are used. Even if it is used on the route redistribution, different routing protocols can use different commands with the route map.
By default, all lists are deleted if no list number is entered.
In some versions, match ip address allow ACL and ip prefix to co-exist to support the separation of odd/even routes. Match ip address associates with ACL to filter the odd/even routes, and associates with prefix list to filter the subnet mask length, so as to separate routes with the specific subnet mask length according to parity.

Examples

The following example enables the OSPF routing protocol to redistribute RIP routes that match access list 10, with the route type being type-1 external type and the default metric being 40.

```
router ospf
redistribute rip subnets route-map redrip
network 192.168.12.0 0.0.0.255 area 0

access-list 10 permit 200.168.23.0

route-map redrip permit 10
match ip address 10
set metric 40
set metric-type type-1!
```

Related commands

Command	Description
access-list	Set the access list.

match interface	Match the next-hop interface of the route.
match ip next-hop	Match the next-hop address in the access list.
match ip route-source	Match the route source address in the access list.
match metric	Match the metric.
match route-type	Match the route type.
match tag	Match the tag.
set metric	Set the metric.
set metric-type	Set the metric type.
set tag	Set the tag.

8.19 match ip next-hop

Use **match ip next-hop** command to redistribute the routes whose next-hop IP address matches the access list or the prefix list. Use the **no** form of this command to remove the setting.

match ip next-hop {*access-list-number* [*access-list-number...* | *access-list-name...*] |*access-list-name* [*access-list-number...*|*access-list-name*] | **prefix-list** *prefix-list-name [prefix-list-name...*]}

no match ip next-hop [*access-list-number* [*access-list-number...* | *access-list-name...*] |*access-list-name* [*access-list-number...*|*access-list-name*] | **prefix-list** *prefix-list-name [prefix-list-name...*]]

Parameter description

Parameter	Description
access-list-number	Number of the access list
access-list-name	Name of the access list
prefix-list *prefix-list-name*	Specify the prefix list to match.

Default configuration

None.

Command mode

Route map configuration mode.

Usage guidelines

Multiple access list numbers or names may follow match ip next-hop.

You can redistribute the routes from one routing process to another routing process. For example, you can redistribute the route in the OSPF routing domain and then advertise it to the RIP routing domain, and vice versa. The mutual route redistribution can be implemented between all the IP routing protocols.

For route redistribution, route maps are usually used to control the mutual route redistribution between two routing domains.

One or more match or set commands can be executed to configure a route map. If the match command is not used, all the routes will be matched. If the set command is not used, no operation will be performed.

Examples

In the example below, the OSPF routing protocol redistributes the RIP routes. As long as the next hop address of the RIP route matches the access list 10 or 20, the OSPF allows for redistribution.

```
router ospf
redistribute rip subnets route-map redrip
network 192.168.12.0 0.0.0.255 area 0

access-list 10 permit 192.168.100.1
access-list 20 permit 172.16.10.1

route-map redrip permit 10
match ip next-hop 10 20
```

Related commands

Command	Description
access-list	Set the access list.
match ip address	Match the IP address in the access list.
match interface	Match the next-hop interface of the route.
match ip route-source	Match the route source address in the access list.
match metric	Match the metric.
match route-type	Match the route type.
match tag	Match the tag.
set metric	Set the metric.
set metric-type	Set the metric type.
set tag	Set the tag.

8.20 match ip route-source

Use **match ip route-source** command to redistribute the routes whose source IP address matches the access list. Use the **no** form of this command to remove the setting.

match ip route-source {*access-list-number* [*access-list-number...* | *access-list-name...*] |*access-list-name* [*access-list-number...*|*access-list-name*] | **prefix-list** *prefix-list-name [prefix-list-name...*]}

no match ip route-source [*access-list-number* [*access-list-number...* | *access-list-name...*] |*access-list-name* [*access-list-number...*|*access-list-name*] | **prefix-list** *prefix-list-name [prefix-list-name...*]]

Parameter description

Parameter	Description
access-list-number	Number of the access list
access-list-name	Name of the access list
prefix-list *prefix-list-name*	Specify the prefix list to match.

Default configuration

None.

Command mode

Route map configuration mode.

Usage guidelines

Multiple access list numbers may follow match ip route-source.
You can redistribute the routes from one routing process to another routing process. For example, you can redistribute the route in the OSPF routing domain and then advertise it to the RIP routing domain, and vice versa. The mutual route redistribution can be implemented between all the IP routing protocols.
For route redistribution, route maps are usually used to control the mutual route redistribution between two routing domains.
One or more match or set commands can be executed to configure a route map. If the match command is not used, all the routes will be matched. If the set command is not used, no operation will be performed.

Examples

In the example below, the OSPF routing protocol redistributes the RIP routes. As long as the source IP address of the RIP route matches the access list 5, the OSPF allows for redistribution.

```
router ospf
redistribute rip subnets route-map redrip
network 192.168.12.0 0.0.0.255 area 0

access-list 5 permit 192.168.100.1

route-map redrip permit 10
 match ip route-source
```

Related commands

Command	Description
access-list	Set the access list.
match ip address	Match the IP address in the access list.
match interface	Match the next-hop interface of the route.
match ip next-hop	Match the next-hop IP address in the access list.
match metric	Match the metric.
match route-type	Match the route type.
match tag	Match the tag.
set metric	Set the metric.
set metric-type	Set the metric type.
set tag	Set the tag.

8.21 match ipv6 address

Use this command to redistribute the network routes permitted in the IPv6 access list or the IPv6 prefix list. Use the **no** form of this command to delete the setting.

match ipv6 address { *access-list-name*] | **prefix-list** *prefix-list-name* }

no match ipv6 address

Parameter description

Parameter	Description
access-list-name	Name of the access list.
prefix-list *prefix-list-name*	Specify the IPv6 prefix list to match.

Default configuration

None

Command mode

Route map configuration mode

Usage guideline

You can redistribute the routing information from one routing process to another routing process. For example, you can redistribute the route in the OSPF routing domain and then advertise it to the RIP routing domain, and vice versa. The mutual route redistribution can be implemented between all the IP routing protocols.

In the route redistribution, route maps are usually used to control the mutual route redistribution between two routing domains.

In configuring one route map, one or more match or set commands can be executed. If the match command is not used, all the routes will be matched. If the set command is not used, no operation will be performed.

The route map can be configured very flexibly to be used for route redistribution and policy-based routing. No matter how the route map is used, the configuration principle is the same, except that different command sets are used. Even if it is used on the route redistribution, different routing protocols can use different commands with the route map.

Examples

The following example enables the OSPF routing protocol to redistribute RIP routes that match access list v6acl, with the default metric being 30.

```
ipv6 router ospf
redistribute rip subnets route-map redrip
ipv6 access-list v6acl
10 permit ipv6 2620::64 any

route-map redrip permit 10
match ipv6 address v6acl
set metric 30
```

Related commands

Command	Description
ipv6 access-list	Set the IPV6 access list.
match interface	Match the next-hop interface of the route.
match ipv6 next-hop	Match the next-hop address in the IPv6 access list.
match ipvr route-source	Match the route source address in the IPv6 access list.
match metric	Match the route metric.
match route-type	Match the route type.
match tag	Match the route tag.
set metric	Set the metric for route redistribution.
set metric-type	Set the type for route redistribution.
set tag	Set the tag for route redistribution.

8.22 match ipv6 next-hop

Use this command to redistribute the network routes whose next-hop IP address matches the IPv6 access list or the IPv6 prefix list. Use the **no** form of this command to delete the setting.

match ipv6 next-hop { *access-list-name*] | **prefix-list** *prefix-list-name*}

no match ipv6 next hop

Parameter description

Parameter	Description
access-list-name	Name of the IPv6 access list.
prefix-list *prefix-list-name*	Specify the IPv6 prefix list to match.

Default configuration None

Command mode Route map configuration mode

Usage guideline

You can redistribute the routes from one routing process to another routing process. For example, you can redistribute the route in the OSPF routing domain and then advertise it to the RIP routing domain, and vice versa. The mutual route redistribution can be implemented between all the IP routing protocols.

For route redistribution, route maps are usually used to control the mutual route redistribution between two routing domains.

One or more match or set commands can be executed to configure a route map. If the match command is not used, all the routes will be matched. If the set command is not used, no operation will be performed.

Examples

The route map can be configured very flexibly to be used for route redistribution and policy-based routing. No matter how the route map is used, the configuration principle is the same, except that different command sets are used. Even if it is used on the route redistribution, different routing protocols can use different commands with the route map. The following example enables the OSPF routing protocol to redistribute RIP routes that only match access list v6acl, with the default metric being 40.

```
ipv6 router ospf
redistribute rip subnets route-map redrip

ipv6 access-list v6acl
10 permit ipv6 2620::64 any

route-map redrip permit 10
match ipv6 address v6acl
set metric 40
```

Related commands

Command	Description
ipv6 access-list	Set the IPV6 access list.
match interface	Match the next-hop interface of the route.
match ipv6 address	Match the IP address in the IPv6 access list.
match ipv6 route-source	Match the route source address in the IPv6 access list.
match metric	Match the route metric.
match route-type	Match the route type.
match tag	Match the route tag.
set metric	Set the metric for route redistribution.
set metric-type	Set the type for route redistribution.
set tag	Set the tag for route redistribution.

8.23 match ipv6 route-source

Use this command to redistribute the network routes whose next-hop IP address matches the IPv6 access list or the IPv6 prefix list. Use the **no** form of this command to delete the setting.

match ipv6 route-source { *access-list-name*] | **prefix-list** *prefix-list-name* }

no match ipv6 route-source

Parameter description

Parameter	Description
access-list-name	Name of the IPv6 access list.
prefix-list *prefix-list-name*	Specify the IPv6 prefix list to match.

Default configuration

None

Command mode

Route map configuration mode

Usage guideline

You can redistribute the routing information from one routing process to another routing process. For example, you can redistribute the route in the OSPF routing domain and then advertise it to the RIP routing domain, and vice versa. The mutual route redistribution can be implemented between all the IP routing protocols.

In the route redistribution, route maps are usually used to control the mutual route redistribution between two routing domains.

In configuring one route map, one or more match or set commands can be executed. If the match command is not used, all the routes will be matched. If the set command is not used, no operation will be performed.

The route map can be configured very flexibly to be used for route redistribution and policy-based routing. No matter how the route map is used, the configuration principle is the same, except that different command sets are used. Even if it is used on the route redistribution, different routing protocols can use different commands with the route map.

Examples

The following example enables the OSPF routing protocol to redistribute RIP routes that only match access list v6acl, with the default metric being 50.

```
ipv6 router ospf
redistribute rip subnets route-map redrip

ipv6 access-list v6acl
10 permit ipv6 5200::64 any

route-map redrip permit 10
match ipv6 address v6acl
set metric 50
```

Related commands

Command	Description
ipv6 access-list	Set the IPV6 access list.
match interface	Match the next-hop interface of the route.
match ipv6 address	Match the IP address in the IPv6 access list.
match ipv6 next-hop	Match the next hop in the IPv6 access list.
match metric	Match the route metric.
match route-type	Match the route type.
match tag	Match the route tag.
set metric	Set the metric for route redistribution.

set metric-type	Set the type for route redistribution.
set tag	Set the tag for route redistribution.

8.24 match metric

Use **match metric** command to redistribute the routes of the specified metric. Use the **no** form of this command to remove the setting.

match metric *metric*

no match metric *metric*

Parameter description

Parameter	Description
metric	Route metric, in the range 0 to 4294967295

Default configuration

None.

Command mode

Route map configuration mode.

Usage guidelines

You can redistribute the routing information from one routing process to another routing process. For example, you can redistribute the route in the OSPF routing domain and then advertise it to the RIP routing domain, and vice versa. The mutual route redistribution can be implemented between all the IP routing protocols.

In the route redistribution, route maps are usually used to control the mutual route redistribution between two routing domains.

In configuring one route map, one or more match or set commands can be executed. If the match command is not used, all the routes will be matched. If the set command is not used, no operation will be performed.

Examples

In the example below, the OSPF routing protocol redistributes the RIP routes of metric 10.

```
router ospf 1
redistribute rip subnets route-map redrip
network 192.168.12.0 0.0.0.255 area 0

route-map redrip permit 10
match metric 10
```

Related commands

Command	Description
access-list	Set the access list.
match ip address	Match the IP address.

match interface	Match the interface.
match ip next-hop	Match the next-hop IP address.
match ip route-source	Match the source IP address.
match route-type	Match the route type.
match tag	Match the tag.
set metric	Set the metric.
set metric-type	Set the metric type.
set tag	Set the tag.

8.25 match origin

Use this command to redistribute the routes whose source IP address is permitted by the ACL in the route map configuration mode. Use the **no** form of this command to remove the setting.

match origin {egp | igp | incomplete}

no match origin [egp | igp | incomplete]

Parameter description

Parameter	Description
egp	Redistribute the routes from the remote EGP.
igp	Redistribute the routes from the local IGP.
incomplete	Redistribute the routes from an incomplete type.

Default configuration None

Command mode Route map configuration mode

Usage guideline Use this command to set the origin of the routes to be redistributed. Only one origin can be set.

Examples

```
Ruijie(config)# route-map MY_MAP 10 permit
Ruijie(config-route-map)# match origin egp
Ruijie(config-route-map)# set community 109
Ruijie(config-route-map)# exit
Ruijie(config)# route-map MAP20 20 permit
Ruijie(config-route-map)# match origin incomplete
Ruijie(config-route-map)# set community no-export
```

Related commands

Command	Description
match as-path	Match the AS_PATH attribute.
match metric	Match the metric.
match origin	Match the source.
set as-path prepend	Set the AS_PATH attribute.
set metric	Set the metric.
set origin	Set the source.

8.26 match route-type

Use this command to redistribute the network routes of the specified type. Use the **no** form of this command to delete the setting.

match route-type { **static | connect | rip | local | internal | external** [**type-1 | type-2**] **| level-1 | level-2** }

no match route-type [**static | connect | rip | local | internal | external** [**type-1 | type-2**] **| level-1 | level-2**]

Parameter description

Parameter	Description
local	Indicates the local route type.
static	Indicates the static route type.
connect	Indicates the directly connected route type.
rip	Indicates the RIP route type.
internal	Indicates the OSPF internal route type.
external	Indicates the OSPF external route type.
**type-1	type-2**	Indicates the OSPF type-1 or type-2 route type.
**level-1	level-2**	Indicates the ISIS level-1 or level-2 route type.

Default configuration None

Command mode Route map configuration mode

Usage guideline

You can redistribute the routing information from one routing process to another routing process. For example, you can redistribute the route in the OSPF routing domain and then advertise it to the RIP routing domain, and vice versa. The mutual route redistribution can be implemented between all the IP routing protocols.

In the route redistribution, route maps are usually used to control the mutual route redistribution between two routing domains.

In configuring one route map, one or more match or set commands can be executed. If the match command is not used, all the routes will be matched. If the set command is not used, no operation will

be performed.

In the example below, the RIP routing protocol redistributes only the internal routes in the OSPF routing domain.

Examples

```
router rip
redistribute ospf route-map redrip
network 192.168.12.0

route-map redrip permit 10
match route-type internal
!
```

Related commands

Command	Description
access-list	Set the access list.
match ip address	Match the IP address.
match interface	Match the interface.
match ip next-hop	Match the next-hop IP address.
match ip route-source	Match the source IP address.
match metric	Match the metric.
match tag	Match the tag.
set metric	Set the metric.
set metric-type	Set the access list.
set tag	Match the IP address.

8.27 match tag

Use this command to redistribute the network routes with the specified tag. Use the **no** form of this command to delete the setting.

match tag *tag* [*…tag*]

no match tag [*tag* [*…tag*]]

Parameter description

Parameter	Description
tag	Route tag

Default configuration None

Command mode Route map configuration mode

Usage guideline

Multiple tags may follow the match tag command.

You can redistribute the routing information from one routing process to another routing process. For example, you can redistribute the route in the OSPF routing domain and then advertise it to the RIP routing domain, and vice versa. The mutual route redistribution can be implemented between all the IP routing protocols.

In the route redistribution, route maps are usually used to control the mutual route redistribution between two routing domains.

In configuring one route map, one or more match or set commands can be executed. If the match command is not used, all the routes will be matched. If the set command is not used, no operation will be performed.

Examples

In the example below, the RIP routing protocol redistributes only the routes with tag 50 and 80 in the OSPF routing domain.

```
router rip
redistribute ospf 100 route-map redrip
network 192.168.12.0

route-map redrip permit 10
match tag 50 80
```

Related commands

Command	Description
access-list	Set the access list.
match ip address	Match the IP address.
match interface	Match the next-hop IP interface.
match ip route-source	Match the source IP address.
match metric	Match the metric.
match ip next-hop	Match the next-hop IP address.
match route-type	Match the route type.
set metric	Set the metric.
set metric-type	Set the metric type.
set tag	Set the tag.

8.28 memory-lack exit-policy

Use this command to configure a policy to preferentially exit a routing protocol when the memory reaches the lower limit. Use the **no** form of this command to restore the default policy, namely, exit the routing protocol which occupies the largest memory.

memory-lack exit-policy { **bgp** | **ospf** | **pim-sm** | **rip** }
no memory-lack exit-policy

Parameter description

Parameter	Description
bgp	Preferentially exit BGP when the memory is insufficient.
ospf	Preferentially exit OSPF when the memory is insufficient.
pim-sm	Preferentially exit PIM-SM when the memory is insufficient.
rip	Preferentially exit RIP when the memory is insufficient.

Default By default, the routing protocol which occupies the largest memory exits preferentially.

Command mode Global configuration mode

Usage guideline When the memory reaches the lower limit, you can disable a routing protocol to release the memory to ensure the normal running of other protocols.
When the system runs out of memory, disable a routing protocol which has the minimal impact on the system to ensure the operation of main services.
Configuring the policy to preferentially exit the routing protocols which are disabled cannot help the system release memory.
This command ensures the operation of main services to some extent when the memory is insufficient. If the memory is further consumed, all routing protocols will exit and stop running.

Examples The following example configures a policy to preferentially exit the BGP protocol when the memory reaches the lower limit.

```
Ruijie(config)# memory-lack exit-policy bgp
```

Related command

Command	Description
-	-

Platform description -

8.29 route-map

Use **route-map** to enter the route map configuration mode and define a route map. Use the **no** form of this command to remove the setting.
route-map *route-map-name* [**permit** | **deny**] [*sequence-number*]
no route-map *route-map-name* [{**permit** | **deny**}*sequence-number*]

Parameter description

Parameter	Description
route-map-name	Name of the route map. The redistribute command references the route map according to its name. Multiple routing policies can be defined in a route map, and each policy corresponds to one sequence number.
permit	(Optional) If the permit keyword is defined and the rule defined by match is met, The set command controls the redistributed routes. For policy-based routing, the set command controls the packet forwarding, and exits the route map operation. If the permit keyword is defined but the rule defined by match is not met, the system performs the routing policy of the second route map till the set command is executed finally.
deny	(Optional) If the deny keyword is defined and the rule defined by match is met, no operation will be performed. Neither route redistribution nor policy-based routing is supported in the route map. The system exits the route map operation. If the deny keyword is defined but the rule defined by match is not met, the system performs the routing policy of the second route map till the set command is executed finally.
sequence-number	Sequence number of the route map. The policy with a lower sequence number is preferred, so it's noted when setting the sequence number.

Default configuration

None.

Command mode

Global configuration mode.

Usage guidelines

At present, the RGOS software primarily uses the route map for route redistribution and policy-based routing.

1. Route redistribution control

You can redistribute the routes from one routing process to another routing process. For example, you can redistribute the route in the OSPF routing domain and then advertise it to the RIP routing domain, and vice versa. The mutual route redistribution can be implemented between all the IP routing protocols.

For route redistribution, route maps are usually used to control the mutual route redistribution between two routing domains.

One or more match or set commands can be executed to configure a route map. If the match command is not used, all the routes will be matched. If the set command is not used, no operation will be performed.

When configuring route maps, pay attention to the following when using the sequence number of a route map:

When you create the first route map policy, if *sequence-number* is not specified, it is 10 by default;
If only one route map policy exists and *sequence-number* is not specified, no new route map policy will be created, and the existing route map policy will be accessed for configuration;
If more than one route map policy is available, the sequence number of each policy shall be specified; otherwise an error message will be displayed.
2. policy-based routing
Policy-based routing refers to a routing mechanism based on user defined policies. Compared with traditional destination IP address-based routing, policy-based routing offers a flexibility for routing based on source IP address, length and port of IP packets.
Policy-based routing can apply to the IP packets received on an interface or the IP packets sent from the local device.

Policy-based routing utilizes route map to define routing and forwarding policy. The match command defines packet filtering rule and the set command defines the action for the packets matching the filtering rules. The match command used includes match ip address and match length; the set command includes set ip tos, set ip precedence, set ip dscp, set ip [default] nexthop, set ip next-hop verify-availability, set [default] interface.

Examples

The following example enables the OSPF routing protocol to redistribute the RIP routes with the hop count of 4. In the OSPF route domain, the route type is the external route type-1, the default metric is 40 and the tag is 40.

```
!
router ospf
 redistribute rip subnets route-map redrip
 network 192.168.12.0 0.0.0.255 area 0
!
!
route-map redrip permit 10
 match metric 4
 set metric 40
 set metric-type type-1
 set tag 40
```

Related commands

Command	Description
redistribute	Redistribute the routes.

8.30 send-lifetime

Use this command in the encryption key configuration mode to specify the lifetime of an encryption key in its send direction. Use the no form of this command to restore the default value.

send-lifetime *start-time* {**infinite** | *end-time* | **duration** *seconds*}
no send-lifetime

Parameter description

Parameter	Description
start-time	Start time of the lifetime. The syntax is as follows: *hh:mm:ss month date year* *hh:mm:ss date month year* ● hh—hour ● mm—minute ● ss—second ● month—month ● date—day ● year—year The default start time is Jun 1, 1993, which is also the earliest start time available.
infinite	Indicates that the encryption key is valid for ever.
end-time	*End time of the encryption key. It must be later than the start time.*
duration *seconds*	Duration of the encryption key after the start time. The value ranges from 1 to 2147483646.

Default infinite

Command mode Encryption key configuration mode

Usage guideline Use this command to specify the lifetime of an encryption key in its send direction.

Examples The following example configures the lifetime from 0:00 on September 9, 2000 to 0:00 on October 12, 2011

```
Ruijie(config)# key chain ripkeys
Ruijie(config-keychain)# key 1
Ruijie(config-keychain-key)# send-lifetime 00:00:00 Sep 9 2000 00:00:00 Dec 12 2011
```

Related command

Command	Description
-	-

Platform description -

8.31 set aggregator as

Use this command to specify the AS_PATH attribute for the aggregator of the routes that match the rule in the route map configuration mode. Use the **no** form of this command to remove the setting. This command is only used to configure policy-based routing.

set aggregator as *as-number ip_addr*

no set aggregator as [*as-number ip_addr*]

Parameter description

Parameter	Description
as-number	AS number of the aggregator
ip_address	IP address of the aggregator

Default configuration None

Command mode Route map configuration mode

Usage guideline Use this command to set the AS_PATH attribute for the matched routes in the BGP routing domain. Only one group of parameters (as-number, ip-addr) is allowed to set at a time.

Examples

```
Ruijie(config)# route-map set-as-path
Ruijie(config-route-map)# match as-path 1
Ruijie(config-route-map)# set aggregator as 3 2.2.2.2
```

Related commands

Command	Description
match as-path	Match the AS_PATH.
match community	Match the community.
match metric	Match the route metric.
match origin	Match the route source.
set community	Set the COMMUNITY attribute.
set metric	Set the metric.
set metric-type	Set the type.

8.32 set as-path replace

Use this command to replace the AS_PATH attribute for the routes that match the rule in the route map

configuration mode. Use the **no** form of this command to remove the setting. This command is only used to configure policy-based routing.

set as-path replace *as-number*

no set as-path replace

Parameter description

Parameter	Description
as-number	Indicates the AS number which will replace the AS_PATH attribute. The AS number ranges from 1 to 4294967295, and 1 to 65535.65535 in dot mode.

Default configuration N/A

Command mode Route map configuration mode

Usage guideline Use this command to replace the AS_PATH attribute for the matched routes. Up to 10 ASs can be added into the as-path for one time.

Examples The following example replaces the AS_PATH attribute “100 101 102” for the route matched with AS path 1.

```
Ruijie(config)# route-map set-as-path
Ruijie(config-route-map)# match as-path 1
Ruijie(config-route-map)# set as-path replace 100 101 102
```

8.33 set as-path prepend

Use this command to specify the AS_PATH attribute for the routes that match the rule in the route map configuration mode. Use the **no** form of this command to remove the setting. This command is only used to configure policy-based routing.

set as-path prepend *as-number*

no set as-path prepend

Parameter description

Parameter	Description
as-number	AS number of the AS_PATH attribute to be configured. The AS number ranges from 1 to 4294967295, and 1 to 65535.65535 in dot mode.

Default configuration None

Command mode Route map configuration mode

Usage guideline Use this command to configure the AS_PATH attribute for the matched routes. Up to 15 ass can be added into the as-path for one time.

Examples

```
Ruijie(config)# route-map set-as-path
Ruijie(config-route-map)# match as-path 1
Ruijie(config-route-map)# set as-path prepend 100 101 102
```

Related commands

Command	Description
match as-path	Match the AS_PATH.
match community	Match the community.
match metric	Match the route metric.
match origin	Match the route source.
set community	Set the COMMUNITY attribute.
set metric	Set the metric.
set metric-type	Set the type.

8.34 set atomic-aggregate

Use this command to set the ATOMIC-AGGREGATE attribute for routes.

set atomic-aggregate

Use the **no** form of this command to delete existing configuration.

no set atomic-aggregate

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Routing map configuration mode

Default Level 14

Usage Guide This command is used only in the BGP protocol and is used to set the ATOMIC-AGGREGATE attribute for routes.

Configuration Examples N/A

8.35 set comm-list delete

Use this command to delete the COMMUNITY_LIST attribute for the routes that match the rule in the route map configuration mode. Use the **no** form of this command to remove the setting. This command is only used to configure policy-based routing.

set comm-list *community-list-number* | *community-list-name* **delete**

no set comm-list *community-list-number* | *community-list-name* **delete**

Parameter description

Parameter	Description
community-list-number	Number of the community list. Standard community list number: 1-99. Extended community list number : 100-199.
community-list-name	Name of the community list, which should be no more than 80 characters.

Default configuration None

Command mode Route map configuration mode

Usage guideline Use this command to set the community attribute value for the matched routes that will be deleted.

Examples

```
Ruijie(config)# router bgp 100
Ruijie(config-router)# neighbor 172.16.233.33 remote-as 120
Ruijie(config-router)# neighbor 172.16.233.33 route-map ROUTEMAPIN in
Ruijie(config-router)# neighbor 172.16.233.33 route-map ROUTEMAPOUT
out
Ruijie(config-router)# exit
Ruijie(config)# ip community-list 500 permit 100:10
Ruijie(config)# ip community-list 500 permit 100:20
Ruijie(config)# ip community-list 120 deny 100:50
Ruijie(config)# ip community-list 120 permit 100:.*
Ruijie(config)# route-map ROUTEMAPIN permit 10
Ruijie(config-route-map)# set comm-list 500 delete
Ruijie(config-route-map)# exit
Ruijie(config)# route-map ROUTEMAPOUT permit 10
Ruijie(config-route-map)# set comm-list 120 delete
```

Related commands

Command	Description
match as-path	Match the AS_PATH attribute value.
match metric	Match the metric.
match origin	Match the source.
set as-path prepend	Set the AS_PATH attribute.
set local-preference	Set the local priority of the route to be redistributed.
set metric-type	Set the metric type.

8.36 set community

Use this command to specify the community for the routes that match the rule in the route map configuration mode. Use the **no** form of this command to remove the setting. This command is only used to configure policy-based routing.

set community {*community-number*[community-number…] [**additive | none**}

no set community

Parameter description

Parameter	Description
community-number	Community number in the form of AA:NN or a large numeral. In addition, it can be well-known community attributes like internet, local-AS, no-export and no-advertise.
additive	Increase on the original COMMUNITY attribute.
none	Set the community attribute as blank.

Default configuration None

Command mode Route map configuration mode

Usage guideline Use this command to set the community attribute for the matched route.

Examples

```
Ruijie(config)# route-map SET_COMMUNITY 10 permit
Ruijie(config-route-map)# match as-path 1
Ruijie(config-route-map)# set community 109:10
Ruijie(config-route-map)# exit
Ruijie(config)# route-map SET_COMMUNITY 20 permit
Ruijie(config-route-map)# match as-path 2
Ruijie(config-route-map)# set community no-export
```

Related commands

Command	Description
match as-path	Match the AS_PATH.
match community	Match the community.
match metric	Match the metric.
match origin	Match the source.
set as-path prepend	Set the AS_PATH attribute.
set origin	Set the source.
set metric-type	Set the metric type.

8.37 set dampening

Use this command to specify the dampening parameters for the routes that match the rule in the route map configuration mode. Use the **no** form of this command to remove the setting. This command is only used to configure policy-based routing.

set dampening *half-life reuse suppress max-suppress-time* [withdrawal-ignore]

no set dampening

Parameter description

Parameter	Description
half-life	Half dampening life for the reachable or unreachable route in the range of 1 to 45 minutes, 15 minutes by default
reuse	When the route penalty is lower than this value, the route suppression is released. It is in the range 1 to 20000, 750 by default
suppress	When the route penalty is higher than this value, the route is suppressed. It is in the range 1 to 20000, 2000 by default
max-suppress-time	Maximum duration a route can be suppressed in the range 1 to 20000 minutes, 4* half-life by default.
withdrawal-ignore	Not to increase the penalty value for route cancellation.

Default configuration None

Command mode Route map configuration mode

Usage guideline Use this command to set the dampening parameter for the matched routes.

Examples

```
Ruijie(config)# route-map tag
Ruijie(config-route-map)# match as path 10
Ruijie(config-route-map)# set dampening 30 1500 10000 120
withdrawal-ignore
Ruijie(config-route-map)# exit
Ruijie(config)# router bgp 100
Ruijie(config-router)# neighbor 172.16.233.52 route-map tag in
```

Related commands

Command	Description
match as-path	Match the AS_PATH value.
match community	Match the community.
match metric	Match the metric.
match origin	Match the source.
set as-path prepend	Set the AS_PATH attribute.
set metric	Set the metric.
set local-preference	Set the local priority of the route to be redistributed.

8.38 set distance

Use this command to set the management distance for routes matching the match rule. Use the **no** form of this command to delete the specified management distance.

set distance { *number* }

no set distance

Parameter Description

Parameter	Description
number	Route management distance, ranging from **1** to **255**

Defaults N/A

Command Mode Routing map configuration mode

Default Level 14

Usage Guide The route management distance affects route selection. Therefore, set the route management distance according to the actual network topology.

Configuration The following example configures the OSPF routing protocol and sets the OSPF route management

Example distance to **112**.

```
Ruijie(config)# route-map test
Ruijie(config-route-map)# set distance 112
Ruijie(config)#exit
Ruijie(config)# router ospf 1
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# distance 111 route-map test
Ruijie(config-router)# exit
```

Verification Run the **show running-config** command to display the configurations.

Prompt Messages N/A

Common Errors N/A

Platform Description N/A

8.39 set extcomm-list delete

Use this command to delete all extcommunity values in the extcommunity list that meet the match rules. Use the **no** form of this command to delete the configuration.

set extcomm-list { *extcommunity-list-number* | *extcommunity-list-name* } **delete**

no set extcomm-list { *extcommunity-list-number* | *extcommunity-list-name* } **delete**

Parameter description

Parameter	Description
extcommunity-list-number	*extcommunity-list-number* Standard list: ranges from 1 to 99. Expanded list: ranges from 100 to 199.
extcommunity-list-name	*extcommunity-list-name* It consists of a maximum of 80 characters.

Default -

Command mode Route map configuration mode.

Usage guideline This command is used to delete the **extcommunity-list.**
This command applies only to policy route configuration.

Examples

```
Ruijie(config)# router bgp 65530
```

```
Ruijie(config-router)# neighbor 172.16.233.33 remote-as 65531
Ruijie(config-router)# address-family vpnv4 unicast
Ruijie(config-router-af)# neighbor 172.16.233.33 activate
Ruijie(config-router-af)# neighbor 172.16.233.33 route-map ROUTEMAPIN in
Ruijie(config-router-af)# neighbor 172.16.233.33 route-map ROUTEMAPOUT out
Ruijie(config-router)# exit
Ruijie(config)# ip extcommunity-list 10 permit rt 100:10
Ruijie(config)# ip extcommunity-list 10 permit rt 100:20
Ruijie(config)# ip extcommunity-list 120 deny 100:50
Ruijie(config)# ip extcommunity-list 120 permit 100:.*
Ruijie(config)# route-map ROUTEMAPIN permit 10
Ruijie(config-route-map)# set extcomm-list 10 delete
Ruijie(config-route-map)# exit
Ruijie(config)# route-map ROUTEMAPOUT permit 10
Ruijie(config-route-map)# set extcomm-list 120 delete
```

Related command

Command	Description
ip extcommunity-list	Configure an **extcommunity-list.**
match as-path	Match the AS_PATH value
match metric	Match the metric.
match origin	Match the source.
set as-path prepend	Set the AS_PATH attribute.
set extcomm-list delete	Set delete **extcommunity-list.**
set local-preference	Set local preference for a reroute.

Platform description -

8.40 set extcommunity

Use this command to specify the extended COMMUNITY attribute for the routes that match the rule in the route map configuration mode. Use the **no** form of this command to remove the setting. This command is only used to configure policy-based routing.

set extcommunity {**rt** *extend-community-value* | **soo** *extend-community-value*}

no set extcommunity {**rt** | **soo** }

Parameter description

Parameter	Description
rt	Specify the extended community value in the form of RT.
soo	Specify the extended community value in the form of SOO.
extend-community-value	Extended community value.

Default configuration None

Command mode Route map configuration mode

Usage guideline Use this command to set the extended community attribute for the matched route.

Examples

```
Ruijie(config)# access-list 2 permit 192.168.78.0 255.255.255.0
Ruijie(config)# route-map MAP_NAME permit 10
Ruijie(config-route-map)# match ip-address 2
Ruijie(config-route-map)# set extcommunity rt 100:2
```

Related commands

Command	Description
match as-path	Match the AS_PATH value
match community	Match the community.
match metric	Match the metric.
match origin	Match the source.
set as-path prepend	Set the AS_PATH attribute.
set metric	Set the metric.
set metric-type	Set the metric type.

8.41 set fast-reroute

Use this command to specify a backup outgoing fast reroute and a backup next-hop for routes that meet the match conditions. Use the no form of this command to delete the configuration.

set fast-reroute backup-interface *interface-type interface-number* [**backup-nexthop** *ip-address*]

no set fast-reroute

Parameter description

Parameter	Description
interface-type interface-number	Backup outgoing interface.
ip-address	Backup next-hop.

Default -

Command mode Route map configuration mode.

Usage Use this command to configure IP FRR backup outgoing interface and backup next-hop. The current

guideline software version supports only one backup route. This command supports only one set of the two parameters.
This command is used for fast reroute configuration.

IP FRR backup routes must not be direct-connection or local host routes.

Examples

```
Ruijie(config)# access-list 2 permit 192.168.78.0 255.255.255.0
Ruijie(config)# route-map frr permit 10
Ruijie(config-route-map)# match ip-address 2
Ruijie(config-route-map)# set fast-reroute backup-interface GigabitEthernet
0/1 backup-nexthop 192.168.1.2
```

Related command

Command	Description
match ip-address	Match IP address list.

Platform description N/A

8.42 set ip default next-hop

Use this command to specify the default next-hop IP address for the packets that match the rule in the route map configuration mode. Use the **no** form of this command to remove the setting.
set ip default next-hop *ip-address* [*weight*] [*…ip-address*[*weight*]]
no set ip default next-hop [*ip-address* [weight] [*…ip-address*[*weight*]]]

Parameter description

Parameter	Description
ip-address	IP address of the next hop.
weight	Weight of the next hop.

Default configuration None

Command mode Route map configuration mode

Usage guideline This command supports two operation modes: WCMP load balancing mode and non-WCMP load balancing mode. In the former mode, the system implements WCMP load balancing according to the weight inputted.
Up to 32 IP addresses may follow the set ip default next-hop command.
If a weight follows ip address, up to 4 next hop IP addresses can be configured.

Note: If a weight follows any next-hop, the operation mode of this command will be automatically switched to the WCMP load balancing mode. In this mode, the weight of those next hop IP addresses whose weight is not configured is 1 by default.
Differences between set ip next-hop and set ip default next-hop: After the set ip next-hop command is configured, the policy-based routing takes precedence over the routing table; while after the set ip default next-hop command is configured, the routing table takes precedence over the policy-based routing.
Use this command to customize a default route for a specified user. If the software fails to find the forwarding route, the packet will be forwarded to the nexthop set with this command.
To use the policy-based routing, you must specify the route map for it and create the route map. A route map contains multiple policies, and each policy defines one or more match rules and the corresponding operations. After policy-based routing is applied to an interface, the packets received by the interface will be checked. The packets that do not match any policy in the route map will be forwarded through the usual route. The packets that match a policy in the route map will be processed according to the operation defined in the policy.
A route-map policy may contain multiple set operations.

Examples

The following example forwards the packets from two different nodes through different routes.
For the messages received on the synchronous interface 1 from 1.1.1.1, if the software cannot find the forwarding route, they are forwarded to device 6.6.6.6. For the messages received from 2.2.2.2, if the software cannot find the forwarding route, they are forwarded to device 7.7.7.7. The other messages will be discarded if the software cannot find the forwarding route.

```
Ruijie(config)#access-list 1 permit 1.1.1.1 0.0.0.0
Ruijie(config)#access-list 2 permit 2.2.2.2 0.0.0.0
Ruijie(config)#interface async 1
Ruijie(config-if)#ip policy route-map equal-access
Ruijie(config)#route-map equal-access permit 10
Ruijie(config- route-map)#match ip address 1
Ruijie(config-route-map)#set ip default next-hop 6.6.6.6
Ruijie(config)#route-map equal-access permit 20
Ruijie(config-route-map)#match ip address 2
Ruijie(config-route-map)#set ip default next-hop 7.7.7.7
Ruijie(config)#route-map equal-access permit 30
Ruijie(config- route-map)#set default interface null 0
```

Related commands

Command	Description
route-map	Define a route map.
match ip address	Match the IP address.
set default interface	Set the default outgoing interface.

set interface	Set the outgoing interface.
set ip next-hop	Set the next hop of the packets.
set ip precedence	Set the priority of the packets.

Platform description N/A

8.43 set ip dscp

Use this command to specify the DSCP value for the packets that match the rule in the route map configuration mode. Use the **no** form of this command to remove the setting.

set ip dscp *dscp-value*

no set ip dscp

Parameter description

Parameter	Description
dscp-value	DSCP value

Default configuration N/A

Command mode Route map configuration mode

Usage guideline N/A

Examples N/A

Related commands

Command	Description
route-map	Define a route map.
match ip address	Match the IP address.
set default interface	Set the default outgoing interface.
set interface	Set the outgoing interface.
set ip next-hop	Set the next hop of the packets.
set ip precedence	Set the priority of the packets.

8.44 set ip next-hop

Use this command to specify the next-hop IP address for the packets that meet the matching rule. Use the **no** form of this command to remove the setting. This command is only used to configure policy-based routing.

set ip next-hop *ip-address* [weight] [*…ip-address* [*weight*]]
no set ip next-hop [*ip-address* [weight] [*…ip-address*[*weight*]]]

Parameter description

Parameter	Description
ip-address	IP address of the next hop.
weight	Weight of the next hop.

Default configuration

None

Command mode

Route map configuration mode

Usage guideline

This command supports two operation modes: WCMP load balancing mode and non-WCMP load balancing mode. In the former mode, the system implements WCMP load balancing according to the weight entered by the user.
Multiple IP addresses may follow set ip next-hop and the number of addresses should be less than 32.

If weight follows any next-hop, the operation mode of this command will be automatically switched to the WCMP load balancing mode. In the WCMP load balancing mode, for the nexthop address without configuring the corresponding weight, the weight is 1 by default.

If weight follows ip address, up to 4 next hop addresses can be configured.
This command can be used to set different routes for the traffic that meets different match rule. If multiple IP addresses are configured, they can be used in turn.
Policy-based routing is a packet forwarding mechanism more flexible than the routing based on the target network. After the policy-based routing is used, the device will decide how to process the packets that need be routed according to the route map, which decides the next-hop device of the packets.
To use the policy-based routing, you must specify the route map for it and create the route map. A route map contains multiple policies, and each policy defines one or more match rules and the corresponding operations. After policy-based routing is applied to an interface, the packets received by the interface will be checked. The packets that do not match any policy in the route map will be forwarded to the usual route. The packets that match a policy in the route map will be processed according to the operation defined in the policy.
A route-map policy may contain multiple set operations.

Examples

The following example enables policy-based routing on serial 1/0. When the interface receives the packets from 10.0.0.0/8, they will be sent to 192.168.100.1; when the interface receives the packets from 172.16.0.0/16, they will be sent to 172.16.100.1; all other packets

will be discarded.

```
Ruijie(config)#interface serial 1/0
Ruijie(config-if)#ip policy route-map load-balance
Ruijie(config)#access-list 10 permit 10.0.0.0 0.255.255.255
Ruijie(config)#access-list 20 permit 172.16.0.0 0.0.255.255
Ruijie(config)#route-map load-balance permit 10
Ruijie(config-route-map)#match ip address 10
Ruijie(config-route-map)#set ip next-hop 192.168.100.1
Ruijie(config)#route-map load-balance permit 20
Ruijie(config-route-map)#match ip address 20
Ruijie(config-route-map)#set ip next-hop 172.16.100.1
Ruijie(config)#route-map load-balance permit 30
Ruijie(config-route-map)#set interface Null 0
```

Related commands

Command	Description
route-map	Define the route map.
match ip address	Match the IP address.
set default interface	Set the default outgoing interface.
set interface	Set the outgoing interface.
set ip default next-hop	Set the default next hop.
set ip precedence	Set the priority of the packets.

8.45 set ip next-hop recursive

Use this command to specify the recursive next-hop IP address for data packets that match a rule.
set ip next-hop recursive *ip-address*

Use the **no** form of this command to delete the configured next-hop IP address.
no set ip next-hop recursive

Parameter Description

Parameter	Description
ip-address	Recursive next-hop IP address

Defaults N/A

Command Mode Routing map configuration mode

Default Level 14

Usage Guide This command is used only to configure PBR. Only one **set ip next-hop recursive** *ip-address* command can be configured in one routing submap policy.
According to the policy, only static or dynamic routes that have an egress and next-hop IP address can be recursed. A route can be recursed to 32 next-hop IP addresses. Only one static route can be recursed to the next hop IP address.

Examples The following example enables PBR on Interface serial 1/0. The interface sends the data packets from the source IP address of 10.0.0.0/8 to the recursive next-hop IP address 192.168.100.1, sends the traffic from the source network 172.16.0.0/16 to the recursive next-hop IP address 172.16.100.1, and forwards other data traffic via common routes.

```
Ruijie(config)#interface serial 1/0
Ruijie(config-if)#ip policy route-map load-balance
Ruijie(config)#access-list 10 permit 10.0.0.0 0.255.255.255
Ruijie(config)#access-list 20 permit 172.16.0.0 0.0.255.255
Ruijie(config)#route-map load-balance permit 10
Ruijie(config-route-map)#match ip address 10
Ruijie(config-route-map)#set ip next-hop recursive 192.168.100.1
Ruijie(config)#route-map load-balance permit 20
Ruijie(config-route-map)#match ip address 20
Ruijie(config-route-map)#set ip next-hop recursive 172.16.100.1
```

8.46 set ip next-hop verify-availability

Use this command to verify the availability of the next hop IP address for the packets that meet the matching rule. Use the **no** form of this command to remove the setting. This command is only used to configure policy-based routing.
set ip next-hop verify-availability *ip-address* [**track** *track-obj-number* | **bfd** *interface-type interface-number gateway*]
no set ip next-hop verify-availability *ip-address* [**track** *track-obj-number* | **bfd** *interface-type interface-number gateway*]

Parameter description

Parameter	Description
ip-address	Indicates the next-hop IP address.
track	Judges whether the next hop is effective by using *Track*.
track-object-num	Indicates the track object number.
bfd	Indicates that BFD is used for neighbor

	detection.
interface-type	Configures the interface type.
interface-number	Configures the interface number.
gateway	Configures the gateway IP address, which is the neighbor IP address of BFD. If the next hop is configured as the neighbor, BFD will be used to detect the accessibility of the forwarding path.

Default configuration None

Command mode Route map configuration mode

Usage guideline None

Examples The following example verifies the availability of the next hop IP address being 192.168.1.2 and the number of the object to be tracked to 1.

```
Ruijie(config)#route-map rmap permit 10
Ruijie(config-route-map)#set ip next-hop verify-availability 192.168.1.2 track 1
```

Related commands

Command	Description
route-map	Define the route map.
match ip address	Match the IP address.
set default interface	Set the default outgoing interface.
set interface	Set the outgoing interface.
set ip default next-hop	Set the default next hop.
set ip precedence	Set the priority of the packets.

8.47 set ip precedence

Use this command to set the precedence of the IP head of the packet matching the rule in the route map configuration mode. Use the **no** form of this command to remove the configured precedence setting.

set ip precedence {*<0-7>* | *critical* | *flash* | *flash-override* | *immediate* | *internet* | *network* | *priority* | *routine* }

no set ip precedence

Parameter Description

Parameter	Description
number	Indicates the priority of the IP header with a number, ranging from 0 to 7. 7: critical 6: flash 5: flash-override 4: immediate 3: internet 2: network 1: priority 0: routine
critical | **flash** | **flash-override** | **immediate** | **internet** | **network** | **priority** | **routine**	Priority of an IP header.

Defaults

N/A

Command mode

Route map configuration mode

Usage guideline

With different precedence values for the IP packet head configured, the IP packets matching the PBR routing are sent according to the different precedence values.
Multiple set ip precedence commands can be executed in the route map configuration rule, but only the last one takes effect, and the precedence will be specified for the head of the IP packet matched the PBR.

Examples

The following example sets the precedence of the packet with the source IP address 192.168.217.68 received at the interface FastEthernet 0/0 as 4:

```
Ruijie(config)#access-list 1 permit 192.168.217.68 0.0.0.0
Ruijie(config)#route-map name
Ruijie(config-route-map)#match ip address 1
Ruijie(config-route-map)#set ip precedence 4
Ruijie(config)#interface FastEthernet 0/0
Ruijie(config-if)#ip policy route-map name
```

Related commands

Command	Description
match interface	Match the next-hop interface.
match ip address	Match the IP address in the ACL.

match ip next-hop	Match the next-hop IP address in the ACL.
match ip route-source	Match the route source IP address in the ACL.
match metric	Match the route metric value.
match route-type	Match the route type.
match tag	Match the route tag value.
set metric-type	Set the type of redistributed route.
set tag	Set the tag value of redistributed route.
set ip tos	Set the tos for the IP packet head.

8.48 set ip tos

Use this command to set the tos of the IP head of the packet matching the rule in the route map configuration mode. Use the **no** form of this command to remove the configured tos setting.

set ip tos {*<0-15>* | *max-reliability* | *max-throughput* | *min-delay* | *min-monetary-cost* | *normal* }

no set ip tos

Default configuration N/A

Command mode Route map configuration mode

Usage guideline

With different TOS values for the IP packet head configured, the IP packets matching the PBR routing are transmitted with different service qualities.

The TOS value will be specified for the head of the IP packet matched the PBR.

Examples

The following example sets the TOS value of the packet with the source IP address 192.168.217.68 received at the interface FastEthernet 0/0 as 4:

```
Ruijie(config)#access-list 1 permit 192.168.217.68 0.0.0.0
Ruijie(config)#route-map name
Ruijie(config-route-map)#match ip address 1
Ruijie(config-route-map)#set ip tos 4
Ruijie(config)#interface FastEthernet 0/0
Ruijie(config-if)#ip policy route-map name
```

Related commands

Command	Description
match interface	Match the next-hop interface.
match ip address	Match the IP address in the ACL.
match ip next-hop	Match the next-hop IP address in the ACL.
match ip route-source	Match the route source IP address in the ACL.

match metric	Match the route metric value.
match route-type	Match the route type.
match tag	Match the route tag value.
set metric-type	Set the type of redistributed route.
set tag	Set the tag value of redistributed route.
set ip precedence	Set the precedence for the IP packet head.

8.49 set ipv6 default next-hop

Use this command to specify the default next-hop IPv6 address for the IPv6 packets that match the rule in the route map configuration mode. Use the **no** form of this command to remove the setting. This command is only used to configure policy-based routing.

set ipv6 default next-hop *global-ipv6-address* [*weight*] […*ipv6-address*[*weight*]]

no set ipv6 default next-hop *glocal-ipv6-address* [weight] […*ipv6-address*[*weight*]]

Parameter description

Parameter	Description
global-ipv6-address	IPv6 address of the next hop. The next hop router must be the neighbor router.
weight	Weight in the load balancing mode, in the range of 1 to 8.

Default configuration

None

Command mode

Route map configuration mode

Usage guideline

With the policy-based routing applied to the interface, for the IPv6 packets matching the corresponding rules, if the usual route (that is the non default route) with the destination of this packet is not in the routing table, this packet will be forwarded to the next hop specified by the set ipv6 default next-hop command. Otherwise it is forwarded through the usual route. Noted that the match rule should be the IPv6 corresponded.

Packets select the egress from the policy-based routing and routing table in following priority.

set ipv6 next-hop;

usual route (the non default route)

set ipv6 default next-hop

default route.

For the switches, this function does not take effect if the mask length is beyond 64.

If this command and the set ipv6 next-hop verify-availability are both configured ,the next hop set by the set ipv6 next-hop verify-availability command will take effect preferentially

Examples

The following examle sets the default next hop of the packet with destination address *2001:0db8:2001:1760::/64* received at the interface fastEthernet 0/0 as *2002:0db8:2003:1::95*

```
Ruijie(config)# ipv6 access-list acl_for_pbr
Ruijie(config-ipv6-acl)#permit ipv6 any 2001:0db8:2001:1760::/64
Ruijie(config)#route-map rm_if_0_0
Ruijie(config-route-map)#match ipv6 address acl_for_pbr
Ruijie(config-route-map)# set ipv6 default next-hop
2002:0db8:2003:1::95
Ruijie(config)#interface FastEthernet 0/0
Ruijie(config-if)#ipv6 policy route-map rm_if_0_0
```

Related commands

Command	Description
match ipv6 address	Set the matching rule of policy-based routing.
ipv6 policy route-map	Use the policy-based routing on the interface.
set ipv6 next-hop	Set the next hop of the policy-based routing.

Platform description

N/A

8.50 set ipv6 fast-reroute

Use this command to specify the FRR backup egress and next hop for routes matching the match rule. Use the **no** form of this command to delete the FRR configuration.

set ipv6 fast-reroute backup-interface *interface-type interface-number* [**backup-nexthop** *ipv6-address*]

no set ipv6 fast-reroute

Parameter Description

Parameter	Description
interface-type interface-number	Backup egress
Ipv6-address	Backup next hop, mandatory for non-P2P interfaces

Defaults N/A

Command Mode Routing map configuration mode

Default Level 14

Usage Guide This command is used only to configure FRR.
Use this command to configure the backup egress and next hop of IPv6 FRR. The current software version supports only one backup route, and this command supports only one group of <interface, next hop> parameters.

The FRR backup entry should not be a direct or local host route.

Configuration Example The following example configures a route map and sets the backup egress to GigabitEthernet 0/1 and backup next hop to 2001::1 for routes matching ACL 2.

```
Ruijie(config)# access-list 2 permit 2001::/64
Ruijie(config)# route-map frr permit 10
Ruijie(config-route-map)# match ip-address 2
Ruijie(config-route-map)# set ipv6 fast-reroute backup-interface GigabitEthernet
0/1 backup-nexthop 2001::1
```

Verification Run the **show running-config** command to display the configurations.

Prompt Messages The specified interface is an L2 interface, for example, GigabitEthernet 0/0.

```
% Invalid parameter: GigabitEthernet 0/0, only support layer 3 interface.
```

8.51 set ipv6 next-hop

Use this command to specify the next-hop IPv6 address for the packets that meet the matching rule. Use the **no** form of this command to remove the setting. This command is only used to configure policy-based routing.

set ipv6 next-hop [vrf *vrf-name* **| global]** *global-ipv6-address* [weight] [*…global-ipv6-address* [*weight*]]

no set ip next-hop [vrf *vrf-name* **| global]** *global-ipv6-address* [weight] [*…global-ipv6-address* [*weight*]]

Parameter description

Parameter	Description
global-ipv6-address	IPv6 address of the next hop. The next hop router should be the neighbor router.
vrf *vrf-name*	The nexthop belongs to the specified VRF which must be the configured IPv6 address family multi-protocol VRF.
global	The nexthop belongs to the global.
weight	Weight of the next hop in the load balancing mode, in the range of

	1to 8.

Default configuration

None

Command mode

Route map configuration mode

Usage guideline

This command supports two operation modes: WCMP load balancing mode and non-WCMP load balancing mode. In the former mode, the system implements WCMP load balancing according to the weight entered by the user.
Multiple IP addresses may follow set ip next-hop and the number of addresses should be less than 32.
If weight follows ip address, up to 4 next hop addresses can be configured.
If the parameter vrf *vrf-name* is specified, packets forwarding will be across the VRF. The packets will be forwarded from VRF to pubic network with the parameter global specified. If no [vrf *vrf-name* | global] is specified, forwarding the IPv6 packets will inherit the VRF, that is the nexthop belongs to the VRF that receives this IPv6 packets.

If weight follows any next-hop, the operation mode of this command will be automatically switched to the WCMP load balancing mode. In the WCMP load balancing mode, for the nexthop address without configuring the corresponding weight, the weight is 1 by default.

When the packets select the egress from the policy-based routing and routing table, the priorities are as bellows.
set ipv6 next-hop;
usual route (the non default route)
set ipv6 default next-hop
Default route.

Examples

The following examle sets the next hop of the packet with destination address *2001:0db8:2001:1760::/64* received at the interface fastEthernet 0/0 as *2002:0db8:2003:1::95*

```
Ruijie(config)# ipv6 access-list acl_for_pbr
Ruijie(config-ipv6-acl)#permit ipv6 any 2001:0db8:2001:1760::/64
Ruijie(config)#route-map rm_if_0_0
Ruijie(config-route-map)#match ipv6 address acl_for_pbr
Ruijie(config-route-map)# set ipv6 next-hop
2002:0db8:2003:1::95
Ruijie(config)#interface FastEthernet 0/0
Ruijie(config-if)#ipv6 policy route-map rm_if_0_0
```

Related commands

Command	Description
match ipv6 address	Set the matching rule of policy-based routing.
ipv6 policy route-map	Use the policy-based routing on the interface.
set ipv6 next-hop	Set the next hop of the policy-based routing.

Platform description N/A

8.52 set ipv6 next-hop recursive

Use this command to specify the IPv6 address of a recursive next hop for packets matching the match rule. Use the **no** form of this command to delete the IPv6 address of a recursive next hop.

set ipv6 next-hop recursive *ipv6-address*

no set ipv6 next-hop recursive

Parameter Description

Parameter	Description
Ipv6-address	IPv6 address of a recursive next hop

Defaults N/A

Command Mode Routing map configuration mode

Default Level 14

Usage Guide This command is used only to configure PBR. Only one **set ip next-hop recursive** *ip-address* command can be configured in one routing sub map policy.

According to the policy, recursion is supported for only static or dynamic routes that have an egress and next-hop IPv6 address. A maximum of 32 recursive next hops are supported.

Configuration Example The following example sets the recursive next hop for packets with the destination address set to 2001:0db8:2001:1760::/64 and received from interface GigabitEthernet 0/0 to 2002:0db8:2003:1::95.

```
Ruijie(config)# ipv6 access-list acl_for_pbr
Ruijie(config -ipv6-acl)#permit ipv6 any 2001:0db8:2001:1760::/64
Ruijie(config)#route-map rm_if_0_0
Ruijie(config-route-map)#match ip address acl_for_pbr
Ruijie(config-route-map)# set ipv6 next-hop recursive 2002:0db8:2003:1::95
Ruijie(config)#interface GigabitEthernet 0/0
```

```
Ruijie(config-if)#ipv6 policy route-map rm_if_0_0
```

Verification Run the **show running-config** command to display the configurations.
Run the **show ipv6 pbr route** command to display the next hop recursed to the static or dynamic route.

8.53 set ipv6 next-hop verify-availability

Use this command to determine the availability of the next-hop IP address.
set ipv6 next-hop verify-availability *global-ipv6-address* [**track** *track-obj-number* | **bfd** *interface-type interface-number gateway*]

Use the **no** form of this command to delete existing configuration.
no set ip next-hop verify-availability *global-ipv6-address* [**track** *track-obj-number* | **bfd** *interface-type interface-number gateway*]

Parameter Description

Parameter	Description
global-ipv6-address	Specifies the next-hop IPv6 address.
track	Detects whether the next hop is effective by using the tracking method.
track-obj-number	Specifies the tracking object number.
bfd	Conducts neighbor detection by using BFD.
interface-type	Specifies the interface type.
interface-number	Specifies the interface number.
gateway	Specifies the gateway IPv6 address, that is, IPv6 address of the BFD neighbor. If the configured next hop is the neighbor, the availability of the forwarding path will be detected using BFD.

Defaults N/A

Command Mode Routing map configuration mode

Default Level 14

Usage Guide This command is used only to configure PBR.

Examples The following example enables the PBR support for BFD and detects the forwarding path to the neighbor 2001:1::2 via BFD.

```
Ruijie(config)# route-map rmap permit 10
Ruijie(config-route-map)# set ipv6 next-hop verify-availability 2001:1::2 bfd
```

```
FastEthernet 0/1 2001:1::2
```

8.54 set ipv6 precedence

Use this command to set the precedence of the IPv6 head of the packet matching the rule in the route map configuration mode. Use the **no** form of this command to remove the configured precedence setting.

set ipv6 precedence {*<0-7>* | *critical* | *flash* | *flash-override* | *immediate* | *internet* | *network* | *priority* | *routine* }

no set ipv6 precedence {*<0-7>* | *critical* | *flash* | *flash-override* | *immediate* | *internet* | *network* | *priority* | *routine* }

Parameter description

Parameter	Description
critical, flash, flash-override, immediate, internet , network , priority , routine	The precedence type of the IPv6 head.
0~7	The configurable precedence range.

Default configuration N/A

Command mode Route map configuration mode

Usage guideline

The following table shows the corresponding relationship between the value and type.

Value	Type
0	routing
1	priority
2	network
3	internet
4	immediate
5	flash-override
6	flash
7	critical

Examples

The following example sets the precedence of IPv6 packet head as 3:

Configure the associated ACL6

```
Ruijie(config)#ipv6 access-list aaa
Ruijie(config-ipv6-acl)#permit ipv6 2003:1000::10/80 2001:100::/64
```

Configure route-map.

```
Ruijie(config)#route-map pbr-aaa permit 10
Ruijie(config-route-map)#set ipv6 next-hop 2001:1234::2
```

Modify the precedence.

```
Ruijie(config-route-map)# set ipv6 precedence 3
```

Or

```
Ruijie(config-route-map)# set ipv6 precedence immediate
```

Related commands

Command	Description
match ipv6 address	Configure the ACL used for matching the packet in IPv6 PBR.
route-map	Use the route map of the policy-based routing.
set default interface	Set the default next-hop egress.
set interface	Set the next hop egress.
set ipv6 default next-hop	Set the default next-hop address for forwarding packets.
set ipv6 next-hop	Set the next-hop address for forwarding packet.
show ipv6 policy	Show the policy-based routing
show route-map	Show the route map configuration.

Platform description N/A

8.55 set level

Use this command to set the level of the area where the routes matching the rule are redistributed in the route map configuration command. Use the **no** form of this command to remove the setting.

set level {level-1| level-2 | level-1-2 | stub-area | backbone}

no set level

Default configuration None

Command mode Route map configuration mode

Examples

In the example below, the OSPF routing protocol redistributes the RIP protocol to the backbone area.

```
Ruijie(config)# router ospf
Ruijie(config-router)# redistribute rip subnets route-map redrip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# set level backbone
```

Related commands

Command	Description
match interface	Match the interface.

match ip address	Match the IP address.
match ip next-hop	Match the next-hop IP address.
match ip route-source	Match the source IP address.
match metric	Match the metric.
match route-type	Match the route type.
match tag	Match the tag.
set metric-type	Set the metric type.
set tag	Set the tag.

8.56 set local-preference

Use this command to set the **LOCAL_PREFERENCE** value for the routes to be redistributed in the route map configuration mode. Use the **no** form of this command to remove the setting.

set local-preference *number*

no set local-preference

Parameter description

Parameter	Description
number	Local priority metric ranging 1 to 4294967295

Default configuration

None

Command mode

Route map configuration mode

Usage guideline

Use this command to set the local preference for the matched routes. Only one local preference can be set.

Examples

```
Ruijie(config)# route-map SET_PREF permit 10
Ruijie(config-route-map)# match as-path 1
Ruijie(config-route-map)# set local-preference 6800
Ruijie(config-route-map)# exit
Ruijie(config)# route-map SET_PREF permit 20
Ruijie(config-route-map)# match as-path 2
Ruijie(config-route-map)# set local-preference 50
```

Related commands

Command	Description
match as-path	Match the AS_PATH attribute.
match metric	Match the route metric.
match origin	Match the source.

set as-path prepend	Set the AS_PATH attribute.
set metric	Set the metric.
set metric-type	Set the metric type.

8.57 set metric

Use **set metric** to set the metric for the routes to be redistributed. Use the **no** form of this command to remove the setting.

set metric [+ *metric-value* | **-** *metric-value* | *metric-value*]

no set metric

Parameter description

Parameter	Description
+	Increase based on the metric of the original route
-	Decrease based on the metric of the original route
metric-value	Metric for the route to be redistributed

Default configuration

The default metric for route redistribution varies with the routing protocol.

Command mode

Route map configuration mode

Usage guideline

You should set the metric according to the actual network topology, because the routing depends on the metric of routes. Attentions should be paid to the upper and lower limits of the routing protocols when you execute the set metric, + metric or – metric commands. When the RIP protocol redistributes the routes of other protocols, the range of the metric after increase or decrease is 1 to 16.

You can redistribute the routes from one routing process to another routing process. For example, you can redistribute the route in the OSPF routing domain and then advertise it to the RIP routing domain, and vice versa. The mutual route redistribution can be implemented between all the IP routing protocols.

For route redistribution, route maps are usually used to control the mutual route redistribution between two routing domains.

One or more match or set commands can be executed to configure a route map. If the match command is not used, all the routes will be matched. If the set command is not used, no operation will be performed.

Examples

The following example enables the OSPF routing protocol to redistribute the RIP routes and sets the default metric to 40.

```
Ruijie(config)# router ospf
```

```
Ruijie(config-router)# redistribute rip subnets route-map redrip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# set metric 40
```

Related commands

Command	Description
match interface	Match the interface.
match ip address	Match the IP address.
match ip next-hop	Match the next-hop IP address.
match ip route-source	Match the source IP address.
match metric	Match the metric.
match route-type	Match the route type.
match tag	Match the tag.
set metric-type	Set the metric type.
set tag	Set the tag.

8.58 set metric-type

Use **set metric-type** to set the type of the routes to be redistributed. Use the **no** form of this command to remove the setting.

set metric-type *type*

no set metric-type

Parameter description

Parameter	Description
type	Type of the routes to be redistributed. At present, you can set the type of the routes that the OSPF protocol redistributes. type-1: Type-1 external route; type-2: Type-2 external route.

Default configuration

Type-2

Command mode

Route map configuration mode

Usage guideline

You can redistribute the routing information from one routing process to another routing process. For example, you can redistribute the route in the OSPF routing domain and then advertise it to the RIP routing domain, and vice versa. The mutual route redistribution can be implemented between all the IP routing protocols.

In the route redistribution, route maps are usually used to control the mutual route redistribution between two routing domains.

In configuring one route map, one or more match or set commands can be executed. If the match command is not used, all the routes will be matched. If the set command is not used, no operation will be performed.

The following example enables the OSPF routing protocol to redistribute the RIP route and sets the type as type-1.

Examples

```
Ruijie(config)# router ospf
Ruijie(config-router)# redistribute rip subnets route-map redrip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# set metric-type type-1
```

Related commands

Command	Description
match interface	Match the interface.
match ip address	Match the IP address.
match ip next-hop	Match the next-hop IP address.
match ip route-source	Match the source IP address.
match metric	Match the metric.
match route-type	Match the route type.
match tag	Match the tag.
set metric	Set the metric.
set tag	Set the tag.

8.59 set next-hop

Use this command to specify the next-hop IP address for the routes that match the rule. Use the **no** form of this command to remove the setting. This command is only used to configure routing policies.

set next-hop *ip-address*

no set next-hop

Parameter description

Parameter	Description
ip-address	IP address of the next hop.

Default configuration None

Command Route map configuration mode

mode

Usage guideline

You can redistribute the routing information from one routing process to another routing process. For example, you can redistribute the route in the OSPF routing domain and then advertise it to the RIP routing domain, and vice versa. The mutual route redistribution can be implemented between all the IP routing protocols.

In the route redistribution, route maps are usually used to control the mutual route redistribution between two routing domains.

In configuring one route map, one or more match or set commands can be executed. If the match command is not used, all the routes will be matched. If the set command is not used, no operation will be performed.

Examples

The following example enables the OSPF routing protocol to redistribute the RIP route and sets the next-hop to 192.168.1.2.

```
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match ip address 1
Ruijie(config-route-map)# set next-hop 192.168.1.2
```

Related commands

Command	Description
match interface	Match the interface.
match ip address	Match the IP address.
match ip next-hop	Match the next-hop IP address.
match ip route-source	Match the source IP address.
match metric	Match the metric.
match route-type	Match the route type.
match tag	Match the tag.
set metric-type	Set the metric type.
set tag	Set the tag.

8.60 set origin

Use this command to set the source of the routes to be redistributed in the route map configuration mode. Use the **no** form of this command to remove the setting.

set origin {egp | igp | incomplete}

no set origin {egp | igp | incomplete}

Parameter description

Parameter	Description
egp	Redistribute the routes from the remote EGP.
igp	Redistribute the routes from the local IGP.

incomplete	Redistribute the routes from an unknown device.

Default configuration None

Command mode Route map configuration mode

Usage guideline Use this command to set the source of the routes to be matched. Only one route source attribute can be set.

Examples

```
Ruijie(config)# route-map SET_ORIGIN 10 permit
Ruijie(config-route-map)# match as-path 1
Ruijie(config-route-map)# set origin igp
Ruijie(config-route-map)# exit
Ruijie(config)# route-map SET_ORIGIN 20 permit
Ruijie(config-route-map)# match as-path 2
Ruijie(config-route-map)# set origin egp
```

Related commands

Command	Description
match as-path	Match the AS_PATH attribute.
match metric	Match the route metric.
match origin	Match the source.
set as-path prepend	Set the AS_PATH attribute.
set metric	Set the metric.
set local-preference	Set the local priority of redistributed routes.

8.61 set originator-id

Use this command to set the source of the routes to be redistributed in the route map configuration mode. Use the **no** form of this command to remove the setting.

set originator-id *ip-addr*

no set originator-id [*ip-addr*]

Parameter description

Parameter	Description
ip-addr	IP address of the originator.

Default configuration None

Command mode Route map configuration mode

Usage guideline Use this command to set the source of the routes to be matched.

Examples

```
Ruijie(config)# route-map SET_ORIGIN 10 permit
Ruijie(config-route-map)# match as-path 1
Ruijie(config-route-map)# set originator-id 5.5.5.5
Ruijie(config-route-map)# exit
Ruijie(config)# route-map SET_ORIGIN 20 permit
Ruijie(config-route-map)# match as-path 2
Ruijie(config-route-map)# set originator-id 5.5.5.6
```

Related commands

Command	Description
match as-path	Match the AS_PATH attribute.
match metric	Match the route metric.
match origin	Match the source.
set as-path prepend	Set the AS_PATH attribute.
set metric	Set the metric.
set local-preference	Set the local priority of redistributed routes.

8.62 set tag

Use this command to set the tag for the routes to be redistributed. Use the **no** form of this command to remove the setting.

set tag *tag*

no set tag

Parameter description

Parameter	Description
tag	Tag of the route to be redistributed

Default configuration The original routing tag remains unchanged.

Command mode Route map configuration mode

Usage guideline This command can only be used for route redistribution. If this command is not configured, the default route tag is used.

Examples The following example enables the OSPF routing protocol to redistribute the RIP route and sets the tag as 100.

```
Ruijie(config)# router ospf
```

```
Ruijie(config-router)# redistribute rip subnets route-map redrip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# set tag 100
```

Related commands

Command	Description
match interface	Match the interface.
match ip address	Match the IP address.
match ip next-hop	Match the next-hop IP address.
match ip route-source	Match the source IP address.
match metric	Match the metric.
match route-type	Match the route type.
match tag	Match the tag.
set metric	Set the metric.
set metric-type	Set the metric type.

8.63 set weight

Use this command to set the weight for the BGP routes matching filtering rules. Use the **no** form of this command to remove the setting.

set weight *number*

no set weight

Parameter description

Parameter	Description
number	Weight in the range of 0 to 65535

Default configuration

None

Command mode

Route map configuration mode

Usage guideline

This command can only be used modify the weight of a BGP route.

By default, the weight of the route learned from a neighbor is the one configured with the neighbor weight command. The weight of the locally generated route is fixed 32768.

Examples

The following example sets the weight for the BGP route learned from the neighbor 1.1.1.1 at the inbound direction to 100.

```
Ruijie(config)# router bgp 1
```

```
Ruijie(config-router)# neighbor 1.1.1.1 route-map nei-rmap-in in
Ruijie(config-router)# exit
Ruijie(config)# route-map nei-rmap-in permit 10
Ruijie(config-route-map)# set weight 100
```

Related commands

Command	Description
match as-path	Match the AS_PATH attribute.
match community	Match the route community.
match metric	Match the route metric.
match origin	Match the source.
set community	Set community of the redistributed route.
set metric	Set the metric of the redistributed route.
set metric type	Set the metric type of the redistributed route.

8.64 statement-name

Use this command to set the statement name of route map. Use the **no** form of this command to remove the settings.

statement-name *name*

no statement-name

Parameter description

Parameter	Description
name	Name of statement

Default configuration None

Command mode Route map configuration mode

Usage guideline The command is not a route policy command and does not apply to routing protocol.
It only takes effect in OPENCONF YANG to record the statement name of route map.

Examples The following example names the statement as sname

```
Ruijie(config)# route-map test
Ruijie(config-route-map)# statement-name sname
```

Related commands

Command	Description

8.65 show ip as-path-access-list

Use this command to display the configuration of AS path access lists.

show ip as-path-access-list [*num*]

Parameter description

Parameter	Description
num	AS path access list number.

Default N/A

Command mode Privileged EXEC mode

Usage guideline N/A

Examples The following example displays the AS path access lists.

```
Ruijie# show ip as-path-access-list
AS path access list 30
permit ^30$
```

Field	Description
AS path access list	AS path access list number
permit	Permits advertisement based on matching conditions.
^30$	Regular expression.

Related command

Command	Description
-	-

Platform description -

8.66 show ip community-list

Use **show ip community-list** command to display the community list.

show ip community-list [*community-list-number* | *community-list-name*]

Parameter description

Parameter	Description
community-list-number	Number of the community list.
community-list-name	Name of the community list.

Default configuration None

Command mode Privileged EXEC mode

Usage guidelines N/A

Examples

```
Ruijie# show ip community-list
Community-list standard local
permit local-AS
Community-list standard Red-Giant
permit 0:10
deny 0:20
```

Related commands

Command	Description
match community	Match the route community.
set comm-list delete	Delete the community attribute in the BGP routes.

8.67 show ip extcommunity-list

Use this command to display the extcommunity list.

show ip extcommunity-list [*extcommunity-list-num* | *extcommunity-list-name*]

Parameter description

Parameter	Description
extcommunity-list-num	extcommunity-list number, ranging from 1 to 199.
extcommunity-list-name	extcommunity-list name.

Default -

Command mode Privileged EXEC mode.

Usage guideline -

Examples

```
Ruijie # show ip extcommunity-list
```

```
Standard extended community-list 1
 10 permit RT:1:200
 20 permit RT:1:100
Standard extended community-list 2
 10 permit RT:1:200
Expanded extended community-list rt_filter
 13 permit 1:100
```

Related command

Command	Description
ip extcommunity-list	Create an extcommunity-list.
match extcommunity	Match an extcommunity.
set extcommunity	Set an extcommunity.

Platform description -

8.68 show ip prefix-list

Use **show ip prefix-list** to display the prefix list or the entries.

show ip prefix-list [*prefix-name*]

Parameter description

Parameter	Description
prefix-name	Name of the prefix list.

Default configuration The configuration information of all the prefix lists is displayed by default.

Command mode Privileged EXEC mode, global configuration mode, interface configuration mode, routing protocol configuration mode, route map configuration mode.

Usage guidelines If no prefix list is specified, the configurations of all the prefix lists are displayed, otherwise only the configuration of the specified prefix list is displayed.

Examples

```
Ruijie# show ip prefix-list
ip prefix-list name : test
seq pre: 2 entries
seq 5 permit 192.168.564.0/24
seq 10 permit 192.2.2.0/24
```

8.69 show ip protocols

Use this command to display information about the status of the currently running IPv4 routing protocol.

show ip protocols [**vrf** *vrf-name*] { **bgp | isis | ospf | rip** }

Parameter Description

Parameter	Description
vrf-name	Specifies the VRF instance name. If it is not specified, information about the status of routing protocols in global VRF mode is displayed.
bgp	Displays information about the status of the BGP protocol.
isis	Displays information about the status of the IS-IS protocol.
ospf	Displays information about the status of the OSPF protocol.
rip	Displays information about the status of the RIP protocol.
-	Displays information about the status of all running routing protocols.

Command Mode Privileged EXEC mode, global configuration mode, interface configuration mode, routing protocol configuration mode, and routing map configuration mode

Default Level 14

Usage Guide Information about the status of only the currently running routing protocol is displayed, and the information about a routing protocol that is not running is not displayed.

Examples The following example displays the status of routing protocols running in global VRF mode.

```
Ruijie# show ip protocols
Routing Protocol is "ospf 1"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 57.57.57.57
  Memory Overflow is enabled
  Router is not in overflow state now
  It is an autonomous system boundary router
  Redistributing External Routes from,
    connected, includes subnets in redistribution
    bgp, includes subnets in redistribution
  Number of areas in this router is 2: 2 normal 0 stub 0 nssa
  Routing for Networks:
    57.57.57.57 0.0.0.0 area 0
    163.18.4.0 0.0.0.255 area 0
```

```
    163.18.57.0 0.0.0.255 area 0
    192.100.1.0 0.0.0.255 area 0
    192.101.1.0 0.0.0.255 area 1
    192.102.1.0 0.0.0.255 area 0
  Reference bandwidth unit is 100 mbps
  Distance: (default is 110)

Routing Protocol is "bgp 10"
  IGP synchronization is disabled
  Default-information originate is disabled
  Default local-preference applied to incoming route is 100
  Redistributing: connected
  Neighbor(s):
    Address          AddressFamily  FiltIn  FiltOut  DistIn  DistOut
RouteMapIn  RouteMapOut  Weight
  Distance: external 20(default) internal 200(default) local 200(default)
```

Field description:

Field	Description
Routing Protocol is "ospf 1"	Name of a routing protocol
Redistributing External Routes from	Route redistribution status of a routing protocol
Distance:	Distance information of a routing protocol

8.70 show ipv6 prefix-list

Use this command to display the information about the IPv6 prefix list or its entries.

show ipv6 prefix-list [*prefix-name*]

Parameter description

Parameter	Description
prefix-name	Name of the IPv6 prefix list.

Default configuration

The configuration information of all the IPv6 prefix lists is displayed.

Command mode

Privileged EXEC mode, global configuration mode, interface configuration mode, route protocol configuration mode, route map configuration mode

Usage guideline

If no prefix list is specified, the configurations of all the prefix lists are displayed, otherwise only the configuration of the specified prefix list is displayed.

Examples

```
Ruijie# show ipv6 prefix-list
Ipv6 prefix-list p6 : 2 entries
permit 13::/20
```

8.71 show key chain

Use this command to display the key chain configuration.

show key chain [*key-chain-name*]

Parameter description

Parameter	Description
key-chain-name	(Optional) Display the configuration of the specified key chain.

Default

The configuration information of all key chains is displayed.

Command mode

Privileged EXEC mode, global configuration mode, interface configuration mode, routing protocol configuration mode, and key chain configuration mode.

Usage guideline

If no key chain is specified, the configuration information of all key chains is displayed.

Examples

```
Ruijie# sh key chain
key chain ripkeys
 key 1 -- text "abc"
 accept-lifetime (00:00:00 Sep 09 2000) - (00:00:00 Dec 12 2011)
 send-lifetime (00:00:00 Sep 09 2000) - (00:00:00 Dec 12 2011)
```

Field	Description
key chain	Key chain name.
key	Key ID.
text	Key string.
accept-lifetime	Lifetime in the accept direction.
send-lifetime	Lifetime in the send direction.

Related command

Command	Description
-	-

Platform description

-

8.72 show route-map

Use the command to display the configuration of the route map.

show route-map [*route-map-name*]

Parameter description

Parameter	Description
route-map-name	(Optional) Display the configuration information of the specified the route map.

Default configuration

The configuration information of all the route maps is displayed.

Command mode

Privileged EXEC mode, global configuration mode, interface configuration mode, routing protocol configuration mode, route map configuration mode.

Usage guidelines

If no route map is specified, the configurations of all the route maps will be displayed, otherwise only the configuration of the specified route map is displayed.

Examples

```
Ruijie# show route-map
route-map AAA, permit, sequence 10
Match clauses:
ip address 2
Set clauses:
metric 10
```

Field	Description
route-map	Name of the route map.
Permit	The route map contains the permit keyword.
sequence 10	Sequence number of the route map.
Match clauses	Set the matching rule. Whether to perform the set operation depends on the permit or deny keyword in the route map.
Set clauses	Set the operation when the rule is matched.

9 PBR Commands

9.1 clear ip pbr statistics

Use this command to clear the IPv4 PBR forwarded packet count.

clear ip pbr statistics [**interface** *if-name* **| local**]

Parameter Description

Parameter	Description
interface *if-name*	Specifies the interface name. If the interface name is specified, the device clears the IPv4 PBR forwarded packet count on that interface. Otherwise, the device clears the IPv4 PBR forwarded packet count on every interface where IPv4 PBR is enabled.
local	Clears the IPv4 PBR forwarded packet count on the local interface.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide Use this command to clear the IPv4 PBR forwarded packet count.

Configuration Examples The following example clears the IPv4 PBR forwarded packet count.

```
Ruijie#clear ip pbr statistics
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.2 clear ipv6 pbr statistics

Use this command to clear the IPv6 PBR forwarded packet count.

clear ipv6 pbr statistics [**interface** *if-name* **| local**]

Parameter Description

Parameter	Description

interface *if-name*	Specifies the interface name. If the interface name is specified, the device clears the IPv6 PBR forwarded packet count on that interface. Otherwise, the device clears the IPv6 PBR forwarded packet count on every interface where IPv6 PBR is enabled.
local	Clears the IPv6 PBR forwarded packet count on the local interface.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide Use this command to clear the IPv6 PBR forwarded packet count.

Configuration Examples The following example clears the IPv6 PBR forwarded packet count.

```
Ruijie#clear ipv6 pbr statistics
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.3 ip local policy route-map

Use this command to apply the policy-based routing (PBR) on the packets sent locally. Use the **no** form of this command to restore the default setting.

ip local policy route-map *route-map*

no ip local policy route-map

Parameter Description

Parameter	Description
route-map	Name of the route map

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide This command is valid for the IP packets sent locally, but not the IP packets received locally. The IP packets received by the local are free from this command.

To use the policy-based routing, you must specify the route map for it and create the route map. A route map contains multiple policies, and each policy defines one or more match rules and the corresponding operations. After policy-based routing is applied to an interface, the packets received by the interface will be checked. The packets that do not match any policy in the route map will be forwarded to the usual route. The packets that match a policy in the route map will be processed according to the operation defined in the policy.

The **set interface** command for the policy-based routing does not support the load-balancing and only supports the redundancy backup.

Configuration Examples

The following examples send the packets with the source address 192.168.217.10 from the serial 2/0.

The following example defines an ACL that match the IP packet.

```
Ruijie(config)#access-list 1 permit 192.168.217.10
```

The following example defines the route map.

```
Ruijie(config)#route-map lab1 permit 10
Ruijie(config-route-map)#match ip address 1
Ruijie(config-route-map)#set interface serial 2/0
Ruijie(config-route-map)#exit
```

The following example applies PBR on the local interface.

```
Ruijie(config)#ip local policy route-map lab1
```

Related Commands

Command	Description
access-list	Defines the access list rule.
route-map	Defines the route map.
set vrf	Defines the VRF instance of the policy-based IP packet.
set ip next-hop	Defines the next hop of the policy-based routing.
set ip default next-hop	Defines the default next hop of the policy-based routing.
set interface	Defines the output port of the policy-based routing.
set default interface	Defines the default policy-based routing output port.
set ip tos	Sets the TOS in the head of the IP packet.
set ip dscp	Sets the DSCP of the IP packet.
set ip precedence	Sets the priority level in the head of the IP packet.
match ip address	Sets the filtering rule.
match length	Matches the packet length.

Platform Description N/A

9.4 ip policy-source in-interface

Use this command to configure the source address policy-based routing for the IPv4 packets received on an interface. Use the **no** form of this command to disable the source address policy-based routing on the interface.

ip policy-source in-interface *interface-type sequence* { *source-address mask* | *source-address/mask* } {[**default**] **next-hop** *ip-address* [*weight*] }

no ip policy-source in-interface *interface-type sequence* [{*source-address mask* | *source-address/mask* } [[**default**] **next-hop** *ip-address* [*weight*]]

Parameter Description

Parameter	Description
interface-type	Interface type
sequence	Policy sequence number. The lower the number is, the higher the priority is.
source-address	Source IPv4 address.
mask	Address mask.
ip-address	Next hop IPv4 address
weight	Next hop weight

Defaults Source address policy-based routing is disabled by default.

Command Mode Global configuration mode

Usage Guide You can configure multiple **ip policy-source in-interface** commands on an interface. The policy with different source addresses must be configured with different sequence numbers. The lower the sequence number is, the higher the priority is.

In case of the same sequence number, the priority order of the next hop type is as follows:

vrf *vrf-name* > **next-hop** *ip-address* > **interface** *out-interface-type*> **default next-hop** *ip-address* > **default interface** *out-interface-type*

The priority of the source address PBR is lower than that of the interface PBR.

Configuration Examples In the example below, when the interface GigabitEthernet0/0 receives a datagram, if the source address of the datagram is 10.0.0.2, the next-hop is set as 196.168.1.2; otherwise, the general forwarding will be performed.

The following example configures source address PBR in global configuration mode.

```
Ruijie(config)# ip policy-source in-interface gigabitEthernet 0/0 1 10.0.0.2 255.255.255.255
next-hop 196.168.1.2
Ruijie(config)# ip policy-source in-interface gigabitEthernet 0/0 2 20.0.0.2
255.255.255.255 next-hop 196.168.2.2
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.5 ip policy

Use this command to set the policy: redundant backup or load balancing used between multiple next hops of the PBR applied for the **set ip [default] nexthop** command in global configuration mode. Use the **no** form of this command to restore the default setting.

ip policy { load-balance | **redundance }**

no ip policy

Parameter Description

Parameter	Description
load-balance | redundance	Specifies the policy: load balancing or redundant backup.

Defaults Redundant backup is adopted by default.

Command Mode Global configuration mode

Usage Guide When you configure the **set ip next-hop** command in sub-route map, it is possible to configure multiple next hops. However, when you set redundant backup, only the first resolved next hop of the policy-based routing takes effect. When the load balancing is set, multiple resolved next hops of the policy-based routing take effect. The WCMP can be set up to 8 next hops, and the ECMP can be set up to 32 next hops. The resolved next hop refers to the ARP message learned by the next hop and the MAC address corresponding to this ARP exists in the MAC address table.

NPE80 does not support this command.

Configuration Examples In the example below, there are multiple next hops configured in the route map. After the redundant backup is set in global configuration mode, only the first next hop among the sub-route map of the

policy-based routing applied on the interface FastEthernet 0/0 takes effect.

The following example sets the ACL that match the IP packet.

```
Ruijie(config)#access-list 1 permit 10.0.0.1
Ruijie(config)#access-list 2 permit 20.0.0.1
```

The following example defines the route map.

```
Ruijie(config)#route-map lab1 permit 10
Ruijie(config-route-map)#match ip address 1
Ruijie(config-route-map)#set ip next-hop 196.168.4.6
Ruijie(config-route-map)#set ip next-hop 196.168.4.7
Ruijie(config-route-map)#set ip next-hop 196.168.4.8
Ruijie(config-route-map)#exit
Ruijie(config)#route-map lab1 permit 20
Ruijie(config-route-map)#match ip address 2
Ruijie(config-route-map)#set ip next-hop 196.168.5.6
Ruijie(config-route-map)#set ip next-hop 196.168.5.7
Ruijie(config-route-map)#set ip next-hop 196.168.5.8
Ruijie(config-route-map)#exit
```

The following example applies the policy-based routing on the interface.

```
Ruijie(config)#interface FastEthernet 0/0
Ruijie(config-if)#ip policy route-map lab1
Ruijie(config-if)#exit
Ruijie(config)#ip policy redundance
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.6 ip policy route-map

Use this command to apply the policy-based routing on an interface. Use the **no** form of this command to restore the default setting.

ip policy route-map *route-map*

no ip policy route-map

Parameter Description

Parameter	Description
route-map	Name of the route map

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide The policy-based routing must be applied on the specified interface. That interface performs the policy-based routing only on the received packets.

To use the policy-based routing, you must specify the route map for it and create the route map. A route map contains multiple policies, and each policy defines one or more match rules and the corresponding operations. After policy-based routing is applied to an interface, the packets received by the interface will be checked. The packets that do not match any policy in the route map will be forwarded to the usual route. The packets that match a policy in the route map will be processed according to the operation defined in the policy.

Up to one route map can be configured on an interface. When you configure a route map on the interface for many times, the latter will overwrite the former.

Configuration Examples In the example below, when the interface FastEthernet0/0 receives a datagram, if the source address of the datagram is 10.0.0.1, it sets the next-hop as 196.168.4.6; if the source address is 20.0.0.1, it sets the next-hop as 196.168.5.6;, otherwise, the general forwarding will be performed.

The following example sets the ACL matched with the IP packets.

```
Ruijie(config)#access-list 1 permit 10.0.0.1
Ruijie(config)#access-list 2 permit 20.0.0.1
```

The following example defines the route map.

```
Ruijie(config)#route-map lab1 permit 10
Ruijie (config-route-map)#match ip address 1
Ruijie(config-route-map)#set ip next-hop 196.168.4.6
Ruijie(config-route-map)#exit
Ruijie(config)#route-map lab1 permit 20
Ruijie(config-route-map)#match ip address 2
Ruijie(config-route-map)#set ip next-hop 196.168.5.6
Ruijie(config-route-map)#exit
```

The following example applies the route map on the interface.

```
Ruijie(config)#interface FastEthernet 0/0
Ruijie(config-if)#ip policy route-map lab1
Ruijie(config-if)#exit
```

Related

Command	Description

Commands

access-list	Defines the access list rule.
route-map	Defines the route map.
set vrf	Defines the VRF instance of the policy-based IP packet.
set ip next-hop	Defines the next hop of the policy-based routing.
set ip default next-hop	Defines the default next hop of the policy-based routing.
set interface	Defines the policy-based routing output port.
set default interface	Defines the default policy-based routing output port.
set ip tos	Sets the TOS in the head of the IP packet.
set ip dscp	Sets the DSCP of the IP packet.
set ip precedence	Sets the priority level in the head of the IP packet.
match ip address	Sets the filtering rule.
match length	Matches the packet length.

Platform Description N/A

9.7 ipv6 local policy route-map

Use this command to enable the policy-based routing on the packets sent locally. Use the **no** form of this command to restore the default setting.

ipv6 local policy route-map *route-map-name*

no ipv6 local policy route-map

Parameter Description

Parameter	Description
route-map-name	Name of the router map applied locally, which is configured by the **router-map** command.

Defaults This function is disabled by default.

Command Mode Global Configuration mode

Usage Guide

- This command is valid only for the IPv6 packets in accordance with the policy (for example, ping packets used for management) sent locally, but not the packets received locally.

- To use the policy-based routing, you must specify the route map for it and create the route map. A route map contains multiple policies, and each policy defines one or more match rules and the corresponding operations. After policy-based routing is applied to an interface, the packets received by the interface will be checked. The packets that do not match any policy in the route map will be forwarded to the usual route. The packets that match a policy in the route map will be processed according to the operation defined in the policy.

Configuration Examples

The following examples displays the PBR application process: The device sends the packets from the source address 2003:1000::10/80 to the 2001:100::/64, the packets will match ACL6 of aaa and be sent to the device 2003:1001::2.

- The following example defines the ACL matched with the IPv6 packet:

```
Ruijie(config)#ipv6 access-list aaa
Ruijie(config)#permit ipv6 2003:1000::10/80 2001:100::/64
```

- The following example defines the router map.

```
Ruijie(config)#route-map pbr-aaa permit 10
Ruijie(config-route-map)#match ipv6 address aaa
Ruijie(config-route-map)#set ipv6 next-hop 2003::1001::2
```

- The following example applies the PBR on the device.

```
Ruijie(config)#ipv6 local policy route-map pbr-aaa
```

Related Commands

Command	Description
match ipv6 address	Sets the ACL6 used to match the IPv6 packets in the IPv6 PBR.
match length	Defines the length of matched packets.
route-map	Defines the route map for PBR.
set default interface	Defines the default next hop output port.
set interface	Defines the next hop output port.
set ipv6 default next-hop	Sets the default next hop of packet forwarding.
set ipv6 next-hop	Sets the next hop of packet forwarding.
set ipv6 precedence	Sets the priority field in the head of IPv6 packets.
show ipv6 policy	Displays the current PBR application.
show route-map	Displays the current router map configuration.

Platform Description

N/A

9.8 ipv6 policy

Use this command to set the policy: redundant backup or load balancing, applied for the **set ip nexthop** command in global configuration mode. Use the **no** form of this command to restore the default setting.

ipv6 policy { load-balance | redundance }

no ipv6 policy

Parameter Description

Parameter	Description
load-balance	Sets the policy as load balancing.
redundance	Sets the policy as redundant backup.

Defaults Redundant backup is adopted by default.

Command Mode Global configuration mode

Usage Guide This command is valid for the IP packets sent locally, but not the IP packets received locally. The IP packets received by the local are free from this command.

To use the policy-based routing, you must specify the route map for it and create the route map. A route map contains multiple policies, and each policy defines one or more match rules and the corresponding operations. After policy-based routing is applied to an interface, the packets received by the interface will be checked. The packets that do not match any policy in the route map will be forwarded to the usual route. The packets that match a policy in the route map will be processed according to the operation defined in the policy.

The **set interface** command for the policy-based routing does not support the load-balancing and only supports the redundancy backup.

Configuration Examples This function is valid for the multiple next-hops.

When you configure the set ip next-hop command in sub-route map, it is possible to configure multiple next hops. However, when you set redundant backup, only the first resolved next hop takes effect. The second configured next hop will take effect only when the first one fails and the first next hop will take effect again if it recovers.

When the load balancing is set, multiple next hops of the policy-based routing take effect.

The WCMP can be set up to 8 next hops, and the ECMP can be set up to 32 next hops.

The resolved next hop refers to the learned MAC address for the next-hop.

The following example sets load-balancing mode for multiple nexthops.

The following example configures an ACL matching with IP packets.

```
Ruijie(config)# ipv6 access-list 1
Ruijie(config-ipv6-acl )# permit ipv6 1000::1 any
```

```
Ruijie(config)# ipv6 access-list 2
Ruijie(config-ipv6-acl )# permit ipv6 2000::1 any
```

The following example defines a route map.

```
Ruijie(config)# route-map lab1 permit 10
Ruijie(config-route-map)# match ipv6 address 1
Ruijie(config-route-map)# set ipv6 next-hop 2002::1
Ruijie(config-route-map)# set ipv6 next-hop 2002::2
Ruijie(config-route-map)# set ipv6 next-hop 2002::3
Ruijie(config-route-map)# exit
Ruijie(config)# route-map lab1 permit 20
Ruijie(config-route-map)# match ipv6 address 2
Ruijie(config-route-map)# set ipv6 next-hop 2002::5
Ruijie(config-route-map)# set ipv6 next-hop 2002::6
Ruijie(config-route-map)# set ipv6 next-hop 2002::7
Ruijie(config-route-map)# exit
```

The following example applies policy-based routing on the interface.

```
Ruijie(config)# interface FastEthernet 0/0
Ruijie(config-if)# ipv6 policy route-map lab1
Ruijie(config-if)# exit
Ruijie(config)# ipv6 policy load-balance
```

Related Commands

Command	Description
set ipv6 default next-hop	Defines the default next hop for forwarding the packets.
set ipv6 next-hop	Defines the next hop for forwarding the packets.
show ipv6 policy	Displays the current policy-based routing application.

Platform Description N/A

9.9 ipv6 policy route-map

Use this command to apply the policy-based routing on an interface in interface configuration mode.

Use the **no** form of this command to restore the default setting.

ipv6 policy route-map *route-map-name*

no ip policy route-map

Parameter

Parameter	Description

Description

route-map-name	Name of the PBR router map applied locally, which is configured by the **router-map** command.

Defaults This function is disabled by default..

Command Mode Interface configuration mode

Usage Guide The policy-based routing must be applied on the specified interface. That interface performs the policy-based routing only on the received packets.

To use the policy-based routing, you must specify the route map for it and create the route map. A route map contains multiple policies, and each policy defines one or more match rules and the corresponding operations. After policy-based routing is applied to an interface, the packets received by the interface will be checked. The packets that do not match any policy in the route map will be forwarded to the usual route. The packets that match a policy in the route map will be processed according to the operation defined in the policy.

⚠ Up to one route map can be configured on an interface. When you configure a route map on the interface for many times, the latter will overwrite the former.

Configuration Examples An IPv6 packet is received on the fastEthernet 0/0. If the packet is sent from 10::/64 network segment, it is forwarded to the next hop of 2000:1; if the packet is sent from 20::/64 network segment, it is forwarded to the next hop of 2000:2 or forwarded as usual.:

The following example configures an ACL matched with the IP packet.

```
Ruijie(config)# ipv6 access-list acl_for_pbr1
Ruijie (config-ipv6-acl)# permit ipv6 10::/64  any
Ruijie(config)# ipv6 access-list acl_for_pbr2
Ruijie (config-ipv6-acl)# permit ipv6 20::/64  any
```

The following example defines a route map.

```
Ruijie(config)# route-map rm_pbr  permit 10
Ruijie (config-route-map)# match ipv6 address acl_for_pbr1
Ruijie(config-route-map)# set ipv6 next-hop 2000::1
Ruijie(config-route-map)# exit
Ruijie(config)# route-map rm_pbr  permit 20
Ruijie(config-route-map)# match ipv6 address acl_for_pbr2
Ruijie(config-route-map)# set ipv6 next-hop 2000::2
Ruijie(config-route-map)# exit
```

The following example applies the route map to the interface.

```
Ruijie(config)# interface FastEthernet 0/0
Ruijie(config-if)# no switchport
```

```
Ruijie(config-if)# ipv6 policy route-map rm_pbr
Ruijie(config-if)# exit
```

Related Commands

Command	Description
route-map	Defines the route map.
match ipv6 address	Sets the IPv6 ACL used to match the IPv6 packets in the IPv6 PBR.
set ipv6 default next-hop	Defines the default next hop of the packet forwarding.
set ipv6 next-hop	Defines the next hop of the packet forwarding.
show ipv6 policy	Displays the current policy-based routing application.
show route-map	Displays the current route map configurations.

Platform Description N/A

9.10 ipv6 policy-source in-interface

Use this command to configure the source address policy-based routing for the IPv6 packets received on an interface. Use the **no** form of this command to disable the source address policy-based routing on the interface.

ipv6 policy-source in-interface *interface-type sequence source-address/prefix-length* {[**default**] **next-hop** *ipv6-address* [*weight*] }

no ipv6 policy-source in-interface *interface-type sequence* [*source-address/prefix-length* [[**default**] **next-hop** *ipv6-address* [*weight*]]

Parameter Description

Parameter	Description
interface-type	Interface type
sequence	Policy sequence number. The lower the number is, the higher the priority is.
source-address	Source IPv6 address.
prefix-length	Prefix length of the source IPv6 address.
Ipv6-address	Next hop IPv6 address
weight	Next hop weight

Defaults Source address PBR is disabled by default.

Command Global configuration mode

Mode

Usage Guide You can configure multiple **ipv6 policy-source in-interface** commands on an interface. The policy with different source addresses must be configured with different sequence numbers. The lower the sequence number is, the higher the priority is.
In case of the same sequence number, the priority order of the next hop type is as follows:
vrf *vrf-name* > **next-hop** *ipv6-address* > **interface** *out-interface-type*> **default next-hop** *ipv6-address* > **default interface** *out-interface-type*
The priority of the source address PBR is lower than that of the interface PBR.

Configuration Examples In the example below, when the interface GigabitEthernet0/0 receives an IPv6 datagram, if the source address of the datagram is in the network segment of 10::/64, the next-hop is set as 2000:1; if the source address of the datagram is in the network segment of 20::/64, the next-hop is set as 2000:2; otherwise, the general forwarding will be performed.
The following example configures source address PBR in global configuration mode.

```
Ruijie(config)# ipv6 source-policy in-interface gigabitEthernet 0/0 2 10::/64 next-hop 2000::1
Ruijie(config)# ipv6 source-policy in-interface gigabitEthernet 0/0 2 20::/64 next-hop 2000::2
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.11 show ip pbr bfd

Use this command to display the correlation between the IPv4 policy router and BFD.
show ip pbr bfd

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the correlation between the IPv4 policy router and BFD.

```
Ruijie# show ip pbr bfd
VRF ID  Ifindex  Host           State  Refcnt
    0       13  192.168.8.100      Up      2
```

Field Description

Field	Description
VRF ID	VRF of BFD neighbors correlated with the policy router
Ifindex	The interface index of BFD neighbors correlated with the policy router
Host	The peer IPv4 address
State	Up/Down status of BFD neighbors correlated with the policy router
Refcnt	Calculation referred by BFD neighbors

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.12 show ip pbr route

Use this command to display the IPv4 PBR information on the interface.

show ip pbr route [**interface** *if-name* **| local**]

Parameter Description

Parameter	Description
interface *if-name*	Specifies the interface name. If the interface name is specified, the IPv4 BPR information of this interface is displayed. Otherwise, the IPv4 BPR information of all interfaces where the IPv4 PBR is enabled is displayed.
local	Displays the IPv4 PBR information on the local interface

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Use this command to display the IPv4 PBR information.

Configuration Examples The following example displays the IPv4 PBR information on the interfaces.

```
Ruijie#show ip pbr route
PBR IPv4 Route Summay : 1
Interface       : GigabitEthernet 0/1
  Sequence      : 10
  ACL[0]        : 2900
ACL_CLS[0]    : 0
  Min Length    : None
  Max Length    : None
  VRF ID        : 0
  Route Flags   :
   Route Type   : PBR
   Direct       : Permit
   Priority     : High
   Tos_Dscp     : None
   Precedence   : None
  Tos_Dscp      : 0
  Precedence    : 0
  Mode          : redundance
  Nexthop Count  : 1
   Nexthop[0]   : 192.168.8.100
   Weight[0]    : 1
   Ifindex[0]   : 2
```

Parameter	Description
PBR IPv4 Route Summay	IPv4 PBR route count.
Interface	Interface where IPv4 PBR is enabled.
Sequence	The PBR serial number.
ACL	The ACL ID used in the match rule.
ACL_CLS	The ACL type used in the match rule, such as the IP standard ACL.
Min Length	The minimum match length.
Max Length	The maximum match length.
VRF ID	Port-correlated VRF ID.
Route Flags	PBR flag bit: Route Type: “PBR” indicates PBR routes.

	"Normal" indicates common routes. Direct: PBR matching action, **permit** or **deny** Priority: PBR priority, **High** or **Low** Tos_Dscp: Displays whether the **tos** rule or the **dscp** rule is configured. Precedence: Displays whether the **set ip precedence** rule is configured.
Mode	Specifies the redundancy mode or the next hop load balancing mode.
Nexthop Count	Specifies the next hop number. ECMP supports up to 32 next hops.
Nexthop	Specifies the next hop IP address.
Weight	Specifies the next hop weight.
Ifindex	Specifies the outbound interface index corresponding to the next hop.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.13 show ip pbr route-map

Use this command to display the IPv4 PBR route-map information.

show ip pbr route-map *route-map-name*

Parameter Description

Parameter	Description
route-map-name	The route-map name.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the IPv4 PBR route-map information.

```
Ruijie#show ip pbr route-map rm
Pbr VRF: GLOBAL, ID: 0
 Forward Mode: redundance
 Forwarding: On

route-map rm
  route-map index: sequence 10, permit
    Match rule:
      ACL ID :     0, ACL CLS: 0, Name: acl1
    Set rule:
      IPv4 Nexthop: 192.168.8.100, (VRF Name: , ID: 0), Weight: 0, Flags: 0
      PBR state info ifx: GigabitEthernet 0/1, Connected: true, Track State:
valid, Flags: 0
```

Field	Description
Pbr VRF	VRF name and VRF ID.
Forward Mode	Sets the load balance mode or the redundancy mode for the next hop.
Forwarding	Displays whether the IP route forwarding is enabled.
Route-map index	The serial number and the type of the sub-map.
Match rule	Match rule.
Set rule	Set rule.
PBR state info	PBR private data information, such as outbound interface and the link state of the next hop.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.14 show ip pbr source-route

Use this command to display information about IPv4 source address-based PBR.

show ip pbr source-route [**interface** *if-name*]

Parameter

Parameter	Description

Description

interface *if-name*	Displays the IPv4 PBR applied to a specified interface if *if-name* is specified. Displays all applied IPv4 PBR information if *if-name* is not specified.

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide You can use this command to display the configured source address-based PBR.

Configuration Examples The following example displays information about the configured source address-based PBR.

```
Ruijie# show ip pbr source-route
PBR IPv4 Source Route
Interface        : GigabitEthernet 0/1
  Sequence       : 10
  Source address : 10.1.1.1/24
  VRF ID         : 0
  Route Flags    :
   Route Type    : PBR
   Direct        : Permit
   Priority      : High
   Match_ipaddr  : Exist
  Mode           : redundance
  Nexthop Count  : 1
   Nexthop[0]    : 192.168.8.100
   Weight[0]     : 1
   Ifindex[0]    : 2
```

Field description:

Field	Description
Interface	Interface to which the PBR is applied
Sequence	Sequence number of the PBR
VRF ID	ID of the VRF table associated with an interface
Route Flags	Flag bit of PBR: Route Type: type of routes. The value **PBR** indicates PBR routes while the value **Normal** indicates common routes.

	Direct: PBR matching mode. The options include **permit** and **deny**. Priority: priority of a PBR route. The options include **High** and **Low**.
Mode	Sets the next hop to work in redundancy mode or load balancing mode.
Nexthop Count	Sets the number of next hops. ECMP supports a maximum of 32 next hops.
Nexthop	Sets the next-hop IPv4 address.
Weight	Sets the next-hop weight value.
Ifindex	Sets the outbound interface index of the next hop.

9.15 show ip pbr statistics

Use this command to display the IPv4 PBR forwarded packet count.

show ip pbr statistics [**interface** *if-name* **| local**]

Parameter Description

Parameter	Description
interface *if-name*	Specifies the interface name. If the interface name is specified, the IPv4 PBR forwarded packet count of this interface is displayed. Otherwise, the IPv4 PBR forwarded packet count of all interfaces where the IPv4 PBR is enabled is displayed.
local	Displays the IPv4 PBR forwarded packet count on the local interface.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the IPv4 PBR forwarded packet count.

```
Ruijie#show ip pbr statistics
IPv4 Policy-based route statistic
 gigabitEthernet 0/1
   statistics : 10
```

Related

Command	Description

Commands

N/A	N/A

Platform Description N/A

9.16 show ip policy

Use this command to display the interface configured with the policy-based routing and the name of route map applied on the interface.

show ip policy [*route-map-name*]

Parameter Description

Parameter	Description
route-map-name	Specifies a route map to be applied on the interfaces.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide You can use this command to verify the current PBR configured in the system.

Configuration Examples The following example displays the current PBR configured in the system.

```
Ruijie#show ip policy
Banlance Mode: redundance
Interface           Route map
local               test
FastEthernet 0/0    test
```

Related Commands

Command	Description
ip policy route-map	Applies the policy-based routing on the interface.
ip local policy route-map	Applies the policy-based routing on the local interface.

Platform Description N/A

9.17 show ipv6 pbr bfd

Use this command to display the correlation between the IPv6 policy router and BFD.

show ipv6 pbr bfd

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the correlation between the IPv6 policy router and BFD.

```
Ruijie# show ipv6 pbr bfd
VRF ID  Ifindex  Host                                State  Refcnt
    0       13  2000: : 2                             Up      1
```

Field Description

Field	Description
VRF ID	VRF of BFD neighbors correlated with the policy router
Ifindex	The interface index of BFD neighbors correlated with the policy router
Host	The peer IPv6 address
State	Up/Down status of BFD neighbors correlated with the policy router
Refcnt	Calculation referred by BFD neighbors

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.18 show ipv6 pbr route

Use this command to display the IPv6 PBR information on the interface.

show ipv6 pbr route [**interface** *if-name* **| local**]

Parameter Description

Parameter	Description
interface *if-name*	Specifies the interface name. If the interface name is specified, the IPv6 BPR information of this interface is displayed. Otherwise, the IPv6 BPR information of all interfaces where the IPv6 PBR is enabled is displayed.
local	Displays the IPv6 PBR information on the local interface.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the IPv6 PBR information on the interfaces.

```
Ruijie#show ipv6 pbr route
PBR IPv6 Route Summary : 1
Interface       : GigabitEthernet 0/2
  Sequence      : 10
  ACL[0]        : 2901
ACL_CLS[0]     : 0
  Min Length    : None
  Max Length    : None
  VRF ID        : 0
  Route Flags   :
   Route Type   : PBR
   Direct       : Permit
   Priority     : High
   Tos_Dscp     : None
   Precedence   : None
  Tos_Dscp      : 0
  Precedence    : 0
  Mode          : redundance
  Nexthop Count  : 1
```

```
Nexthop[0]    : 10::1
Weight[0]     : 1
Ifindex[0]    : 3
```

Parameter	Description
PBR IPv4 Route Summay	IPv4 PBR route count.
Interface	Interface where IPv4 PBR is enabled.
Sequence	The PBR serial number.
ACL	The ACL ID used in the match rule.
ACL_CLS	The ACL type used in the match rule, such as the IP standard ACL.
Min Length	The minimum match length.
Max Length	The maximum match length.
VRF ID	Port associated VRF ID.
Route Flags	PBR flag bit: Route Type: “PBR” indicates PBR routes. “Normal” indicates common routes. Direct: PBR matching action, **permit** or **deny** Priority: PBR priority, **High** or **Low** Tos_Dscp: Displays whether the **tos** rule or the **dscp** rule is configured. Precedence: Displays whether the **set ip precedence** rule is configured.
Mode	Specifies the redundancy mode or the load balance mode for the next hop.
Nexthop Count	Specifies the next hop number. ECMP supports up to 32 next hops.
Nexthop	Specifies the next hop IP address.
Weight	Specifies the next hop weight.
Ifindex	Specifies the outbound interface index corresponding to the next hop

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.19 show ipv6 pbr route-map

Use this command to display the IPv6 PBR route-map information.

show ipv6 pbr route-map *route-map-name*

Parameter Description

Parameter	Description
route-map-name	The route-map name.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the IPv6 PBR route-map information.

```
Ruijie#show ipv6 pbr route-map rm6
Pbr VRF: GLOBAL, ID: 0
 Forward Mode: redundance
 Forwarding: On

route-map rm6
  route-map index: sequence 10, permit
Match rule:
  ACL ID :     0, ACL CLS: 0, Name: acl6
    Set rule:
      IPv6 Nexthop: 10::1, (VRF Name: , ID: 0), Weight: 0, Flags: 0
      PBR state info ifx: GigabitEthernet 0/0, Connected: true, Track State:
valid, Flags: 0
```

Field	Description
Pbr VRF	VRF name and VRF ID.
Forward Mode	Sets the load balancing mode or to the redundancy mode for the next hop.
Forwarding	Displays whether the IP route forwarding is enabled.
Route-map index	The serial number and the type of the sub-map.
Match rule	Match rule
Set rule	Set rule.

PBR state info	PBR private data information, such as outbound interface and the link state of the next hop.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.20 show ipv6 pbr source-route

Use this command to display the IPv6 source address PBR configuration.

show ipv6 pbr source-route [**interface** *if-name*]

Parameter Description

Parameter	Description
interface *if-name*	Displays the IPv6 source address PBR configuration on the specified interface. If the parameter is not configured, the IPv6 source address PBR configuration on all interfaces will be displayed.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the IPv6 source address PBR configuration.

```
Ruijie# show ipv6 pbr source-route
PBR IPv6 Source Route
Interface        : GigabitEthernet 0/1
  Sequence       : 10
  Source address : 1000::1/64
  VRF ID         : 0
  Route Flags    :
   Route Type    : PBR
   Direct        : Permit
   Priority      : High
```

```
  Match_ipaddr  : Exist
 Mode           : redundance
 Nexthop Count  : 1
  Nexthop[0]    : 1001::2
  Weight[0]     : 1
  Ifindex[0]    : 3
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.21 show ipv6 pbr statistics

Use this command to display the IPv6 PBR forwarded packet count.

show ip pbr statistics [**interface** *if-name* **| local**]

Parameter Description

Parameter	Description
interface *if-name*	Specifies the interface name. If the interface name is specified, the IPv6 PBR forwarded packet count of this interface is displayed. Otherwise, the IPv6 PBR forwarded packet count of all interfaces where the IPv6 PBR is enabled is displayed.
local	Displays the IPv6 PBR forwarded packet count on the local interface.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the IPv6 PBR forwarded packet count.

```
Ruijie#show ipv6 pbr statistics
IPv6 Policy-based route statistic
 gigabitEthernet 0/1
   statistics : 20
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.22 show ipv6 policy

Use this command to display which interfaces are configured with IPv6 PBR.

show ipv6 policy [*route-map-name*]

Parameter Description

Parameter	Description
route-map-name	Name of the PBR router map.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the current PBR applied in the system.

```
Ruijie#show ipv6 policy
Banlance Mode: redundance
Interface               Route map
VLAN 1                   RM_for_Vlan_1
VLAN 2                   RM_for_Vlan_2
```

Field	Description
Balance Mode	The current PBR running mode.
Interface	The name of interface with PBR applied.
Route map	The name of route map applied on the interface.

Related Commands

Command	Description
show route-map	Displays the current configured route map.

Platform N/A

Description

10 VRF Commands

10.1 address-family

Use this command to configure an IPv4 address family or IPv6 address family for a multiprotocol VRF.

address-family { **ipv4 | ipv6** }

Parameter Description

Parameter	Description
ipv4	Enters IPv4 address family.
ipv6	Enters IPv6 address family.

Defaults No IPv4 address family or IPv6 address family is configured for a multiprotocol VRF.

Command mode VRF configuration mode

Usage Guide This command is applicable only to the multiprotocol VRF.

Configuration Examples The following example defines a multiprotocol VRF vrf1 and configures an IPv4 address family.

```
Ruijie(config)#vrf definition vrf1
Ruijie(config-vrf)#address-family ipv4
Ruijie(config-vrf-af)#
```

Related Commands

Command	Description
exit-address-family	Exits the VRF address family configuration mode.
vrf definition	Defines a multiprotocol VRF.

Platform Description N/A

10.2 description

Use this command to configure the VRF description.

description *string*

Parameter Description

Parameter	Description
string	VRF description character string. The maximum length is 244 characters.

Defaults No VRF description is configured by default .

Command mode VRF configuration mode

Usage Guide N/A

Configuration Examples The following example defines a single-protocol IPv4 VRF vrf1 and configure the description to vpn-a.

```
Ruijie(config)#ip vrf definition vrf1
Ruijie(config-vrf)#description vpn-a
```

The following example defines a multiprotocol VRF vrf2 and configure the description to vpn-b.

```
Ruijie(config)#vrf definition vrf1
Ruijie(config-vrf)#description vpn-b
```

Related Commands

Command	Description
ip vrf	Defines a single-protocol IPv4 VRF.
vrf definition	Defines a multiprotocol VRF.

Platform Description N/A

10.3 exit-address-family

Use this command to exit VRF address family configuration mode.

exit-address-family

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command mode VRF address family configuration mode

Usage Guide N/A

Configuration Examples The following example defines a multiprotocol VRF *vrf1* and configures an IPv4 address family.

```
Ruijie(config)#vrf definition vrf1
Ruijie(config-vrf)#address-family ipv4
Ruijie(config-vrf-af)# exit-address-family
Ruijie(config-vrf)#
```

Related Commands

Command	Description
address-family	Configures an IPv4 address family or IPv6 address family for a multiprotocol VRF.
vrf definition	Defines a multiprotocol VRF.

Platform Description N/A

10.4 ip vrf

Use this command to create a VRF. Use the **no** form of this command to delete a VRF.

ip vrf *vrf-name*

no ip vrf *vrf-name*

Parameter Description

Parameter	Description
vrf-name	VRF name

Defaults No VRF is configured by default.

Command mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example creates a VRF.

```
Ruijie(config)# ip vrf redvrf
Ruijie(config-vrf)#
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10.5 ip vrf forwarding

Use this command to add an interface or sub-interface to a VRF. Use the **no** form of this command to quit the VRF.

ip vrf forwarding *vrf-name*

no ip vrf forwarding *vrf-name*

Parameter Description

Parameter	Description
vrf-name	Name of the VRF that the interface or sub-interface joins

Defaults By default, the interface does not belong to any VRF.

Command mode Interface configuration mode

Usage Guide You can bind the interface to the uni-protocol IPv4 VRF without the IPv6 enabled on the interface. On the device supporting the VRF, if the interface is bound to the uni-protocol IPv4 VRF with the IPv6 protocol enabled, the device cannot forward the IPv6 packets received on this interface.

Configuration Examples The following example adds an interface or sub-interface to a VRF.

```
Ruijie(config-if-GigabitEthernet 0/0)# ip vrf forwarding redvrf
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10.6 ip vrf receive

Use this command to import the host and direct-connected route of one interface into the specified VRF routing table. Use the **no** form of this command to remove the imported host and direct-connected route from the VRF.

ip vrf receive *vrf-name*

no ip vrf receive *vrf-name*

Parameter Description

Parameter	Description
vrf-name	Name of the VRF that the host and direct-connected route imported to.

Defaults By default, the host and direct-connected route of the interface are not imported to other VRFs

Command mode Interface configuration mode

Usage Guide

Currently, the **ip vrf receive** command supports the VRF routing based on the PBR. This command is used to import the host with the main and slave addresses and direct-connected route of this interface into the specified VRF routing table. You need to execute this command multiple times to import this host and direct-connected route to multiple VRF routing tables. Unlike the **ip vrf forwarding** command, which does not bind the interface to the VRF and this interface still belongs to the global VRF. Configuring both **ip vrf forwarding** and **ip vrf receive** on an interface is not allowed. If one has been configured, configuring the other one will prompt an error message.

If **ip vrf forwarding** has been configured, configuring **ip vrf receive** will prompt:

```
% Cannot configure 'ip vrf receive' if interface is under a VRF
```

If **ip vrf receive** has been configured, configuring **ip vrf forwarding** will prompt:

```
% Cannot bind interface to a VRF if it has configed 'ip vrf receive'
```

Configuration Examples The following example imports the host and direct-connected route of one interface into the specified VRF routing table.

```
Ruijie(config)# interface FastEthernet0/1
Ruijie(config-if)# ip address 192.168.1.2 255.255.255.0
Ruijie(config-if)# ip policy route-map PBR-VRF-SELECTION
Ruijie(config-if)# ip vrf receive VRF_1
Ruijie(config-if)# ip vrf receive VRF_2
Ruijie(config-if)# end
```

Related Commands

Command	Description
ip vrf forwarding	Adds the interface to a VRF.
ip vrf	Creates a VRF.
set vrf	Sets the VRF in the routing map configuration mode.

Platform Description N/A

10.7 maximum routes

Use this command to set the maximum routes limit within the VRF. Use the **no** form of this command to remove the setting.

maximum routes *limit* { *warn-threshold* | **warning-only** }

no maximum routes

Parameter Description

Parameter	Description
limit	The maximum number of routes, in the range from 1 to 4,294,967,295. The routes which exceed the limits will not be added to the core routing table.
warn-threshold	The warning will be printed when the threshold is reached. The threshold value is in the range from 1 to 100.
warning-only	After the number of routes reaches *limit*, the warning will be printed but the routes will be added to the core routing table.

Defaults N/A

Command Mode Single-protocol VRF is configured in VRF configuration mode; multiple-protocol VRF is configured in address family mode.

Usage Guide This command is used to set the maximum number of routes for the VRF.

Configuration Examples The following example sets the maximum number of routes for vrf1 to 1,000, and enables the device to only print the warning.

```
Ruijie(config)# ip vrf vrf1
Ruijie(config-vrf)# maximum routes 1000 warning-only
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10.8 vrf definition

Use this command to create the multiprotocol VRF.

vrf definition *vrf-name*

Parameter Description

Parameter	Description
vrf-name	VRF name, no more than 31 characters.

Defaults N/A

Command mode Global configuration mode

Usage Guide The single-protocol VRF configuration command **ip vrf** cannot be used to edit a multiprotocol VRF; the multiprotocol VRF configuration command **vrf definition** cannot be used to edit a single-protocol IPv4 VRF.

Configuration Examples The following example s creates a multiprotocol VRF *vrf1.*

```
Ruijie(config)#vrf definition vrf1
Ruijie(config-vrf)#
```

Related Commands

Command	Description
description	Configures the description.
address-family	Configures an IPv4 address family or IPv6 address family for a multiprotocol VRF.
exit-address-family	Exits the VRF address family configuration mode.
vrf forwarding	Binds a network interface to a multiprotocol VRF.

Platform N/A

Description

10.9 vrf forwarding

Use this command to bind a network interface to a multiprotocol VRF.
vrf forwarding *vrf-name*

Parameter Description

Parameter	Description
vrf-name	VRF name, which shall be a multiprotocol VRF instead of a single-protocol VRF that supports IPv4 only.

Defaults The network interface is not bound to any VRF.

Command mode Interface configuration mode

Usage Guide The configuration command **ip vrf forwarding** cannot be used to bind a network interface to a multiprotocol VRF; the configuration command **vrf forwarding** cannot be used to bind a network interface to a single-protocol IPv4 VRF.
An interface cannot be bound to a multiprotocol VRF that is not configured with any address family.
To bind a network interface to a multiprotocol VRF, you should delete the existing IPv4 addresses, VRRP IPv4 addresses, IPv6 addresses and VRRP IPv6 addresses, and disable IPv6 on the interface.
When a network interface is bound to a multiprotocol VRF, no IPv4 address or VRRP IPv4 address should be configured for the interface if no IPv4 address family is configured for the VRF. You should configure an IPv4 address family for the VRF before configuring an IPv4 address and VRRP IPv4 address for the interface.
When a network interface is bound to a multiprotocol VRF, no IPv6 address or VRRP IPv6 address should be configured for the interface if no IPv6 address family is configured for the VRF. You should configure an IPv6 address family for the VRF before configuring an IPv6 address and VRRP IPv6 address for the interface.
If you delete a multiprotocol VRF's IPv4 address family, you should delete the IPv4 addresses and VRRP IPv4 addresses of all network interfaces bound to the VRF, and delete the IPv4 static routes whose routing VRF or next-hop VRF is that VRF. Likewise, if you delete a multiprotocol VRF's IPv6 address family, you should delete the IPv4 addresses and VRRP IPv6 addresses of all network interfaces bound to the VRF, disable IPv6 on the interfaces, and delete the IPv6 static routes whose routing VRF or next-hop VRF is that VRF.

Configuration Examples The following example binds the interface VLAN 1 to a multiprotocol VRF vrf1.

```
Ruijie(config)#vrf definition vrf1
Ruijie(config-vrf)#address-family ipv4
```

```
Ruijie(config-vrf-af)#exit-address-family
Ruijie(config-vrf)#address-family ipv6
Ruijie(config-vrf-af)#exit-address-family

Ruijie(config-vrf)#interface vlan 1
Ruijie(config-if)#vrf forwarding vrf1
Ruijie(config-if)#ip address 1.1.1.1 255.255.255.0
Ruijie(config-if)#ipv6 address 1000::1/64
```

Related Commands

Command	Description
vrf definition	Defines a multiprotocol VRF.

Platform Description N/A

10.10 vrf global-vrf

Use this command to enter the global VRF configuration mode.

vrf global-vrf

Parameter Description

Parameter	Description

Defaults The global VRF exists by default. IPv4 and IPv6 address families are enabled by default.

Command mode Global configuration mode

Usage Guide

Configuration Examples The following example enters the global VRF configuration mode.

```
Ruijie(config)# vrf global-vrf
Ruijie(config-global-vrf)#
```

Related Commands

Command	Description

Platform Description N/A

10.11 vrf receive

Use this command to add the local host's route and direct route with the interface's IPv4/v6 address to the routing table of the specified VRF.

vrf receive *vrf-name*

Parameter Description

Parameter	Description
vrf-name	VRF name, which should be a multiprotocol VRF instead of a single-protocol IPv4 VRF.

Defaults N/A

Command mode Interface configuration mode

Usage Guide This command is not used to bind an interface to a VRF, and the interface is still a global interface.

If the administrator needs to use PBR to choose VRF, the **vrf receive** command should be configured on the interfaces where PBR is applied for each selected VRF.

When an IPv4 address family is configured for a multiprotocol VRF, the local host's route and direct route with the interface's IPv4 address is added to the IPv4 routing table of the specified VRF, and the local host's route with the IPv4 address of the master VRRP group on the interface is added to the IPv4 routing table of the specified VRF. When an IPv6 address family is configured for a multiprotocol VRF, the local host's route and direct route with the interface's IPv6 address is added to the IPv6 routing table of the specified VRF, and the local host's route with the IPv6 address of the master VRRP group on the interface is added to the IPv6 routing table of the specified VRF.

The **ip vrf forwarding** and **vrf receive** commands are mutually exclusive on an interface, and so are the vrf forwarding and vrf receive commands. If both commands are configured on an interface, an error message will be shown.

If the **ip vrf forwarding** or **vrf forwarding** command is configured first, and then the **vrf receive** command is configured, the following message will be displayed:

```
% Cannot configure 'vrf receive' if interface is under a VRF
```

If the **vrf receive** command is configured first, and then the **ip vrf forwarding** or **vrf forwarding** command is configured, the following message will be displayed:

```
% Cannot configure 'vrf forwarding vrf2' on this interface, please delete'ip vrf receive' and 'vrf receive' first.
```

Configuration Examples The following example selects a VRF using IPv6 PBR on VLAN 1.

```
Ruijie(config)#vrf definition vrf1
Ruijie(config-vrf)#address-family ipv6
Ruijie(config-vrf-af)#exit-address-family
```

```
Ruijie(config-vrf)#vrf definition vrf2
Ruijie(config-vrf)#address-family ipv6
Ruijie(config-vrf-af)#exit-address-family

Ruijie(config-vrf)#route-map pbr-vrf-selection permit 10
Ruijie(config-route-map)#match ipv6 address acl1
Ruijie(config-route-map)#set vrf vrf1
Ruijie(config-route-map)#route-map pbr-vrf-selection permit 20
Ruijie(config-route-map)#set vrf vrf2

Ruijie(config-route-map)#interface vlan 1
Ruijie(config-if)#ipv6 policy route-map pbr-vrf-selection
Ruijie(config-if)#ipv6 address 1000::1/64
Ruijie(config-if)#vrf receive vrf1
Ruijie(config-if)#vrf receive vrf2
```

Related Commands

Command	Description
vrf definition	Defines a multiprotocol VRF.
address-family	Configures an IPv4 address family or IPv6 address family for a multiprotocol VRF.
set vrf	Configures a VRF in the route map configuration mode.

Platform Description N/A

10.12 show ip vrf

Use this command to display the VRF information.

show ip vrf [**brief** | **detail** | **interfaces**] [*vrf-name*]

Parameter Description

Parameter	Description
brief	(Optional) Displays the VRF information in brief.
detail	(Optional) Displays the VRF information in detail.
interfaces	(Optional) Displays the VRF's interface information in detail.
vrf-name	(Optional) Name of the VRF

Defaults N/A

Command mode Privileged EXEC mode

Usage Guide Use this command to display the VRF information, which can be divided into two levels:
Use the keyword **brief** to display the information in brief.
Use the keyword **detail** to display the information in detail.
Use the keyword interfaces to display the VRF's interface information.

Configuration Examples The following example displays the VRF information.

```
Ruijie#show ip vrf
Name                                Interfaces
aaa                                 GigabitEthernet 0/0
                                         GigabitEthernet 0/1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10.13 show vrf

Use this command to display the VRF configuration (including the single-protocol VRF and the multiple-protocol VRF).
show vrf [**ipv4** | **ipv6** | **brief** | **detail**] [*vrf-name*]

Parameter Description

Parameter	Description
ipv4	Displays the brief VRF (the single-protocol VRF) information of the IPv4 address family.
ipv6	Displays the VRF brief information of the IPv6 address family.
brief	Displays the brief VRF (including the single-protocol VRF and the multiple-protocol) information.
detail	Displays the detailed VRF (including the single-protocol VRF and the multiple-protocol) information.
vrf-name	VRF name.

Defaults N/A

Command mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays brief information about all VRF.

```
Ruijie#show vrf
  Name       Default RD        Protocols   Interfaces
  aaa        <not set>         ipv4
  aab        <not set>
  bbb        <not set>         ipv6
  ccc        <not set>         ipv4,ipv6   Vl1
```

:

Field	Description
Name	VRF name.
Default RD	Default RD of the VRF.
Protocol	The address family of the VRF. IPv4 indicates the VRF is enabled in the IPv4 address family mode; ipv6 indicates the VRF is enabled in the IPv6 address family mode.
Interfaces	The interface list of the VRF. The interface where the [ip] vrf forwarding command has been configured will be displayed on that list.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10.14 show global-vrf

Use this command to display the VRF configuration (including the single-protocol VRF and the multiple-protocol VRF).

show global-vrf [**ipv4** | **ipv6** | **brief** | count | **detail**] [*vrf-name*]

Parameter Description

Parameter	Description
ipv4	Displays the brief VRF (the single-protocol VRF) information of the IPv4 address family.
Ipv6	Displays the VRF brief information of the IPv6 address family.
brief	Displays the brief VRF (including the single-protocol VRF and the multiple-protocol) information.
detail	Displays the detailed VRF (including the single-protocol VRF and the multiple-protocol) information.

Defaults N/A

Command mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays brief information about all VRF.

```
Ruijie#show global-vrf
Name                    Default RD          Protocol(s)     Interface
@#global-vrf            <not set>           ipv4,ipv6       VLAN 1:
```

Field	Description
Name	Global VRF name.
Default RD	Default RD of the global VRF.
Protocol	The address family of the global VRF. IPv4 indicates the VRF is enabled in the IPv4 address family mode; ipv6 indicates the VRF is enabled in the IPv6 address family mode.
Interfaces	The interface list of the global VRF. The interface where the [ip] vrf forwarding command has been configured will be displayed on that list.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11 L3MAC Commands

11.1 l3intf-mac-add

Use this command to add a layer-3 MAC address. Use the **no** form of this command to delete the configured layer-3 MAC address of the device.

l3intf-mac-add *mac-id*

no l3intf-mac-add *mac-id*

Parameter Description

Parameter	Description
mac-id	Indicates the layer-3 MAC address.

Defaults N/A

Command Mode Global configuration mode

Default Level 14

Usage Guide If the destination MAC address of a packet matches the configured layer-3 MAC address, layer-3 routing can be triggered for this packet.

Configuration Example The following example adds the layer-3 MAC address 000.1122.3355 to the device.

```
Ruijie#configure terminal

Ruijie(config)#l3intf-mac-add 0000.1122.3355
```

Verification

1. Run the **show run** command to check whether the current configuration is correct.
2. Run the **show l3intf-mac-add** command to check whether the current configuration is correct.

Prompt N/A

Common Errors N/A

Platform Description N/A

11.2 show l3intf-mac-add

Use this command to display the configured layer-3 MAC address of the device.

show l3intf-mac-add

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide N/A

Configuration Example The following example displays the configured layer-3 MAC address.

```
Ruijie(config)#show l3intf-mac-add
l3intf mac address:
   0000.0001.2235
```

Prompt N/A

Platform Description N/A

12 Hardware Capacity Query Commands

12.1 show route-res usage slot *slot_num*

Use this command to display the FIB hardware capacity and resource usage of a specified line card in standalone mode.

show route-res usage slot *slot_num*

Parameter Description

Parameter	Description
slot_num	Specifies the ID of the slot in which the line card of the chassis-type device resides, where **0** indicates a box-type device.

Defaults N/A

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Example The following example displays the FIB hardware capacity and resource usage on the S6220H, S6500 or N18000-X DB series products.

```
Ruijie#show route-res usage slot 0
Switch Mode Current:default
Switch Mode Next   :default
-----------------------------------
L3 Software Statistics:
-----------------------
Switch  Slot    Chip    Name            Used            Description
-------------------------------------------------------------------------------------
----
1       0       0       IPV4_LPM        0               ipv4 route in lpm table
1       0       0       IPV4_HOST       0               ipv4 route in l3_entry table
1       0       0       IPV4_HOSTFULL   0               ipv4 route in l3_entry_double
table

1       0       0       IPV6_64_LPM     0               ipv6-64 route in lpm table
1       0       0       IPV6_128_LPM    0               ipv6-65~128 route in lpm table
1       0       0       IPV6_HOST       0               ipv6 route in l3_entry_double
```

```
1       0       0       IPV6_HOST_FULL  0               ipv6 route in l3_entry_qual
-------------------------------------------------------------------------------------
----
Switch  Slot    Chip    Name            Used    Max     Description
-------------------------------------------------------------------------------------
----
1       0       0       NEXTHOP         0       49152   nexthop number
1       0       0       ECMP_GROUP      0       4096    ecmp group number
-------------------------------------------------------------------------------------
----

L3 Forwarding Resourses:
------------------------
Switch  Slot    Chip    Resource    Service       Max        Used[   %]       Remain
-------------------------------------------------------------------------------------
1       0       0       L3_ENTRY                  212992        0[  0%]       212992
1       0       0                   IPV4_HOST                 0             212992
1       0       0                   IPV4_HOSTFULL             0             106496
1       0       0                   IPV6_HOST                 0             106496
1       0       0                   IPV6_HOSTFULL             0             53248
-------------------------------------------------------------------------------------
1       0       0       L3_DEFIP                  6144          0[  0%]       6144
1       0       0                   IPV4                      0             12288
1       0       0                   IPV6_64                   0             6144
-------------------------------------------------------------------------------------
1       0       0       L3_DEFIP_128              1024          0[  0%]       1024
1       0       0                   IPV6_128                  0             1024
```

The following example displays the FIB hardware capacity and resource usage on the N18000-X CB series products.

```
Ruijie#show route-res usage slot 2

Switch Mode Current:default

Switch Mode Next   :default

-----------------------------------

L3 Software Statistics:

-----------------------

Switch  Slot    Chip    Name           Used

-------------------------------------------------------

1       2       0       IPV4_LPM       4

1       2       0       IPV4_HOST      4

1       2       0       ARP_EXT        4
```

```
1       2       0       IPV6_LPM        14
-------------------------------------------------------
Switch  Slot    Chip    Name            Used    Max
-------------------------------------------------------
1       2       0       NEXTHOP         25      131072
1       2       0       ECMP_GROUP      0       4096
1       2       0       ENCAP           8       196608
-------------------------------------------------------
```

Verification N/A

Prompt N/A

Common Errors N/A

Platform Description N/A

12.2 show route-res usage switch *switch_num* slot *slot_num*

Use this command to display the FIB hardware capacity and resource usage of a specified line card in VSU mode.

show route-res usage switch *switch_num* **slot** *slot_num*

Parameter Description

Parameter	Description
switch_num	Indicates the device ID of the chassis- or box-type device in VSU mode. In standalone mode, the keyword **switch** is not displayed.
slot_num	Specifies the ID of the slot in which the line card of the chassis-type device resides, where **0** indicates a box-type device.

Defaults N/A

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Example The following example displays the FIB hardware capacity and resource usage on the S6220H, S6500 or N18000-X DB series products.

```
Ruijie#show route-res usage switch 1 slot 0
Switch Mode Current:default
Switch Mode Next   :default
-----------------------------------
L3 Software Statistics:
-----------------------
Switch  Slot    Chip    Name            Used            Description
-------------------------------------------------------------------------------------------
----
1       0       0       IPV4_LPM        7               ipv4 route in lpm table
1       0       0       IPV4_HOST       9               ipv4 route in l3_entry table
1       0       0       IPV4_HOSTFULL   3               ipv4 route in l3_entry_double
table

1       0       0       IPV6_64_LPM     8               ipv6-64 route in lpm table
1       0       0       IPV6_128_LPM    0               ipv6-65~128 route in lpm table
1       0       0       IPV6_HOST       9               ipv6 route in l3_entry_double
1       0       0       IPV6_HOST_FULL  0               ipv6 route in l3_entry_qual
-------------------------------------------------------------------------------------------
----
Switch  Slot    Chip    Name            Used    Max     Description
-------------------------------------------------------------------------------------------
----
1       0       0       NEXTHOP         33      49152   nexthop number
1       0       0       ECMP_GROUP      1       4096    ecmp group number
-------------------------------------------------------------------------------------------
----

L3 Forwarding Resourses:
------------------------
Switch  Slot    Chip    Resource    Service       Max        Used[   %]       Remain
-------------------------------------------------------------------------------------
1       0       0       L3_ENTRY                212992       33[  0%]       212959
1       0       0                   IPV4_HOST                 9             212959
1       0       0                   IPV4_HOSTFULL             3             106479
1       0       0                   IPV6_HOST                 9             106479
1       0       0                   IPV6_HOSTFULL             0             53239
-------------------------------------------------------------------------------------
1       0       0       L3_DEFIP                6144         12[  0%]       6132
1       0       0                   IPV4                      7             12264
1       0       0                   IPV6_64                   8             6132
```

```
-------------------------------------------------------------------------------------
1       0       0       L3_DEFIP_128              1024          0[  0%]       1024
1       0       0                    IPV6_128                   0             1024
-------------------------------------------------------------------------------------
```

The following example displays the FIB hardware capacity and resource usage on the N18000-X CB series products.

```
Ruijie#show route-res usage switch 1 slot 2

Switch Mode Current:default
Switch Mode Next   :default
------------------------------------
L3 Software Statistics:
-----------------------
Switch  Slot    Chip    Name            Used
-------------------------------------------------------
1       2       0       IPV4_LPM        0
1       2       0       IPV4_HOST       0
1       2       0       ARP_EXT         0

1       2       0       IPV6_LPM        2
-------------------------------------------------------
Switch  Slot    Chip    Name            Used    Max
-------------------------------------------------------
1       2       0       NEXTHOP         2       131072
1       2       0       ECMP_GROUP      0       4096
1       2       0       ENCAP           0       196608
-------------------------------------------------------
```

Prompt N/A

Platform Description N/A

12.3 show route-res usage all

Use this command to display the FIB hardware capacity and resource usage of all line cards in standalone or VSU mode.

show route-res usage all

Parameter Description

Parameter	Description

N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Example The following example displays the FIB hardware capacity and resource usage on the S6220H, S6500 or N18000-X DB series products.

```
Ruijie#show route-res usage all
Switch Mode Current:default
Switch Mode Next   :default
-----------------------------------
L3 Software Statistics:
-----------------------
Switch  Slot    Chip    Name            Used            Description
-------------------------------------------------------------------------------------
----
1       0       0       IPV4_LPM        0               ipv4 route in lpm table
1       0       0       IPV4_HOST       0               ipv4 route in l3_entry table
1       0       0       IPV4_HOSTFULL   0               ipv4 route in l3_entry_double
table

1       0       0       IPV6_64_LPM     0               ipv6-64 route in lpm table
1       0       0       IPV6_128_LPM    0               ipv6-65~128 route in lpm table
1       0       0       IPV6_HOST       0               ipv6 route in l3_entry_double
1       0       0       IPV6_HOST_FULL  0               ipv6 route in l3_entry_qual
-------------------------------------------------------------------------------------
----
Switch  Slot    Chip    Name            Used    Max     Description
-------------------------------------------------------------------------------------
----
1       0       0       NEXTHOP         0       49152   nexthop number
1       0       0       ECMP_GROUP      0       4096    ecmp group number
-------------------------------------------------------------------------------------
----

L3 Forwarding Resourses:
------------------------
Switch  Slot    Chip    Resource    Service      Max        Used[   %]       Remain
```

```
-------------------------------------------------------------------------------
1       0       0       L3_ENTRY                212992        0[  0%]       212992
1       0       0                   IPV4_HOST                 0             212992
1       0       0                   IPV4_HOSTFULL             0             106496
1       0       0                   IPV6_HOST                 0             106496
1       0       0                   IPV6_HOSTFULL             0             53248
-------------------------------------------------------------------------------
1       0       0       L3_DEFIP                6144          0[  0%]       6144
1       0       0                   IPV4                      0             12288
1       0       0                   IPV6_64                   0             6144
-------------------------------------------------------------------------------
1       0       0       L3_DEFIP_128            1024          0[  0%]       1024
1       0       0                   IPV6_128                  0             1024
-------------------------------------------------------------------------------
```

The following example displays the FIB hardware capacity and resource usage on the N18000-X CB series products.

```
Ruijie#show route-res usage all


Switch Mode Current:default
Switch Mode Next   :default
-------------------------------------
L3 Software Statistics:
-----------------------
Switch  Slot    Chip    Name           Used
-------------------------------------------------------
1       2       0       IPV4_LPM       4
1       2       0       IPV4_HOST      4
1       2       0       ARP_EXT        4


1       2       0       IPV6_LPM       14
-------------------------------------------------------
Switch  Slot    Chip    Name           Used    Max
-------------------------------------------------------
1       2       0       NEXTHOP        25     131072
1       2       0       ECMP_GROUP     0      4096
1       2       0       ENCAP          8      196608
```

```
-----------------------------------------------------

Ruijie#
```

Prompt	N/A
Platform Description	N/A

Multicast Configuration Commands

1. IPv4 Multicast Routing Commands
2. IPv6 Multicast Routing Commands
3. IGMP Commands
4. MLD Commands
5. PIM-DM Commands
6. PIM-SM Commands
7. PIM-SMv6 Commands
8. MSDP Commands
9. IGMP Snooping Commands
10. MLD Snooping Commands

1 IPv4 Multicast Routing Commands

1.1 clear ip mroute

Use this command to remove the forwarding information of the IP multicast routes.

clear ip mroute {***** | *group-address* [*source -address*]}

Parameter Description

Parameter	Description
*	Removes all the forwarding information in the IP multicast route table.
group-address	Group IP address of IP multicast routes
source-address	Source IP address of multicast routes

Command Mode Privileged EXEC mode

Configuration Examples The following example removes the entry whose group IP address is 230.0.0.1 from the multicast routing table:

```
Ruijie# clear ip mroute 230.0.0.1
```

Related Commands

Command	Description
show ip mroute	Displays the forwarding information of multicast routes.

Platform Description N/A

1.2 clear ip mroute statistics

Use this command to remove the statistics of IP multicast routes.

clear ip mroute statistics {***** | *group-address* [*source -address*]}

Parameter Description

Parameter	Description
*	Removes all the forwarding entries in the multicast route table.
group-address	Group IP address of IP multicast routes
source-address	Source IP address of multicast route

Command Mode Privileged EXEC mode

Usage Guide This command allows you to clear the statistics information of IP multicast routes.

Configuration Examples

The following example clears the statistics of entry with the group IP address 230.0.0.1 from the multicast routing table.

```
Ruijie# clear ip mroute statistics 230.0.0.1
```

Related Commands

Command	Description
show ip mroute	Displays the multicast route forwarding information.
clear ip mroute	Clears the multicast route forwarding information.

Platform Description

N/A

1.3 ip mroute

Use this command to configure static multicast routes.

Use the **no** form of this command to delete the configured routes.

Use the **default** form of this command to restore the default setting.

ip mroute *source-address mask* { [*protocol*] { *rpf-addrress* | *interface-type interface-number* } } [*distance*]

no ip mroute *source-address mask* [*protocol as-number*] {*rpf-addrress* | *interface-type interface-number*} [*distance*]

default ip mroute *source-address mask* [*protocol*]

Parameter Description

Parameter	Description
source-address	Source IP address of the multicast route
mask	Mask of the source IP address
protocol	(Optional) The unicast routing protocol being used
rpf-address	Incoming interface of the multicast route
interface-type interface-number	Interface type and interface ID
distance	Management distance used to determine whether to use the route for RPF routing, ranging from 1 to 255.

Defaults

The default is 0.

Command Mode

Global configuration mode

Usage Guide

This command is used to configure the route for the purpose of RFF check. Note that the configured route is prior to the route learned in the unicast form.

Configuration Examples

The following example allows the multicast routes of all the sources in a network to pass 172.30.10.13.

```
Ruijie(config)# ip mroute 172.16.0.0 255.255.0.0
172.30.10.13
```

Platform Description N/A

1.4 ip multicast-routing

Use this command to enable multicast routing forwarding.
Use the **no** form of this command to disable multicast routing forwarding.
Use the **default** form of this command to restore the default setting.
ip multicast-routing
no ip multicast-routing
default ip multicast-routing

Parameter Description	**Parameter**	**Description**
	N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide This command allows you to enable IPv4 multicast routing forwarding. The multicast protocol will not be enabled with IPv4 multicast routing forwarding disabled.

Configuration Examples This command enables multicast routing forwarding.

```
Ruijie(config)# ip multicast-routing
```

Platform Description N/A

1.5 ip multicast boundary

Use this command to configure the boundary of an IP multicast group.
Use the **no** form of this command to remove the configuration.
Use the **default** form of this command to restore the default setting.
ip multicast boundary *access-list*
no ip multicast boundary *access-list*
default ip multicast boundary *access-list* [**in** | **out**]

Parameter Description	**Parameter**	**Description**
	access-list	Access list associated with the multicast boundary

Defaults The boundary of a specified IP multicast group is defined by default.

Command Mode Interface configuration mode

Usage Guide
Note that the ACL associated with the multicast boundary is either standard ACL or extended ACL. But the extended ACL only match the destination IP address.
Note:
This command filters IGMP and PIMSM packets of the specified IP address range. Multicast packets will not be received and sent through the interface of the boundary.

Configuration Examples
The following example configures svi1 as the boundary of all IP multicast groups.

```
Ruijie(config)# ip access-list mul-boun
Ruijie(config-std-nacl)# permit ip 233.3.3.0 0.0.0.255
Ruijie(config-std-nacl)#exit
Ruijie(config)# interface vlan 1
Ruijie(config-if)# ip multicast boundary mul-boun
```

1.6 ip multicast route-limit

Use this command to limit the number of the entries that can be added to the multicast routing table.
Use the **no** form of this command to remove the configuration.
Use the **default** form of this command to restore the default setting.
ip multicast route-limit *limit* [*threshold*]
no ip multicast route-limit
default ip multicast route-limit

Parameter Description

Parameter	Description
limit	The number of the entries that can be added to the multicast routing table is 1 to 2147483647.
threshold	(Optional) Number of multicast routes at which alarms will be triggered.

Defaults
The default value of *limit* is 1024.
The default value of *threshold* is 2147483647.

Command Mode Global configuration mode

Usage Guide
This command is used to restrict the number of route adding to the IPv6 multicast table. Note that the hardware resources of different devices are limited. The routes exceeding the hardware resource will be forwarded by software, which leads to lower product performance.

If you want to use the PIM protocol to create more than 128 entries in the multicast routing table, you are advised to set the CPP value of PIM packets to the number of entries in the multicast routing table. If you want to use the IGMP protocol to create more than 1000 entries in the multicast routing table, you are advised to set the CPP value of IGMP packets to the number of entries in the multicast routing table.

Configuration Examples The following example sets the route limit to 500.

```
Ruijie(config)# ip multicast route-limit 500
```

Platform Description N/A

1.7 ip multicast rpf longest-match

Select the multicast static routing, MBGP routing and unicast routing that could be used for the RPF check from the multicast static routing table, MBGP routing table and unicast routing table respectively by following the RPF rules. Use this command to select the one with the mask longest-matched from the three routings. If the routings are in the same priority, select the routing in order of multicast static routing, MBGP routing, unicast routing.

Use the **no** or **default** form of this command to restore it to the default setting. By default, select one routing of the highest priority from the three routings. If the routings are in the same priority, select the routing in order of multicast static routing, MBGP routing, unicast routing.

ip multicast rpf longest-match

no ip multicast rpf longest-match

default ip multicast rpf longest-match

Parameter Description

Parameter	Description
N/A	N/A

Defaults Select the multicast static routing, MBGP routing and unicast routing that are used for the RPF check from the multicast static routing table, MBGP routing table and unicast routing table respectively by following the RPF rules. Then select one routing of the highest priority from the three routings. If the routings are in the same priority, select the routing in order of multicast static routing, MBGP routing, unicast routing.

Command Mode Global configuration mode

Configuration Examples The following example configures to select the routing with the longest-match.

```
Ruijie(config)# ip multicast rpf longest-match
```

Platform Description N/A

1.8 ip multicast static

Use this command to enable flow control for multicast packets on the Layer 2 interface.
Use the **no** form of this command to remove the configuration.
Use the **default** form of this command to restore the default setting.**ip multicast static** *source-address group-address interface-type interface-number*
no ip multicast static *source-address group-address interface-type interface-number*
default ip multicast static *source-address group-address interface-type interface-number*

Parameter Description

Parameter	Description
source-address	Source IP address
group-address	IP address of the multicast group
interface-type interface number	Layer 2 interface on which multicast packets are allowed to forward

Defaults This function is disabled by default

Command Mode Global configuration mode

Usage Guide You can configure more than one command (or more than one interface) for a multicast flow. With flow control enabled, the multicast flow can only be forwarded through these configured interfaces.
This command controls the forwarding of multicast flows on an interface without any direct influence on the packet processing of multicast protocols. However, the action of a multicast protocol (for instance, PIM-DM or PIM-SM) may be affected because some features of the multicast protocol are driven by multicast flows.

Configuration Examples The following example configures forwarding multicast flows (192.168.43.4 and 255.1.1.5) through GigabitEthernet 2/6 and FastEthernet 3/2.

```
Ruijie(config)# ip multicast static 192.168.43.4 225.1.1.5 G2/6
Ruijie(config)# ip multicast static 192.168.43.4 225.1.1.5 F3/2
```

Platform Description N/A

1.9 ip multicast ttl-threshold

Use this command to configure TTL (time-to-live) threshold on the interface.
Use the **no** or **default** form of this command to restore the default setting.

ip multicast ttl-threshold *ttl-value*
no ip multicast ttl-threshold
default ip multicast ttl-threshold

Parameter Description	**Parameter**	**Description**
	ttl-value	TTL threshold on the interface, within the range of 0 to 255.

Defaults The default *ttl-value* is 0.

Command Mode Interface configuration mode

Usage Guide Use **show running-config** to display configuration. A device with multicast enabled can maintain one TTL threshold for every interface. If the TTL of the multicast packet received is greater than the threshold of the interface, the packets will be forwarded. Otherwise, the packet is discarded. Note that the TTL threshold is effective only to the multicast frames. In addition, you must configure it on the L3 interface.

Configuration Examples The following example sets the TTL threshold on the interface to 5.

```
Ruijie(config-if)# ip multicast ttl-threshold 5
```

1.10 msf ipmc-overflow override

Use this command to enable the overflow overriding mechanism.
Use the **no** form of this command to remove the configuration.
Use the **default** form of this command to restore the default setting.
msf ipmc-overflow override
no msf ipmc-overflow override
default msf ipmc-overflow override

Parameter Description	**Parameter**	**Description**
	N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example enables the overflow overriding mechanism.

```
Ruijie (config)# msf ipmc-overflow override
Ruijie (config)#
```

Platform Description N/A

1.11 msf nsf

Use this command to configure the parameter for the continous multicast forwarding.

Use the **no** or **default** form of this command to restore the default setting.

msf nsf { **convergence-time** *time* | **leak** *interval* }

no msf nsf {**convergence-time** | **leak**}

default msf nsf {**convergence-time** | **leak**}

Parameter Description

Parameter	Description
convergence-time *time*	Maximum time for the multicast protocol convergence, in the valid range of the 0-3600s.
leak *interval*	Packet multicast leak time, in the valid range of 0-3600s

Defaults

convergence-time *time* :20s

leak interval: 30s

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples

The following example sets the maximum time for the protocol convergence.

```
Ruijie (config)# msf nsf convergence-time 300
Ruijie (config)#
```

The following example sets the packets leak time:

```
Ruijie(config)# msf nsf leak 200
Ruijie(config)#
```

Platform Description N/A

1.12 show ip mrf mfc

Use this command to display the IPv4 multicast routing forwarding table.

show ip mrf mfc [*soure-address group-address*]

Parameter Description

Parameter	Description
source-address	Source address of the multicast routing forwarding entries
group-address	Group address of the multicast routing forwarding entries

Defaults

All IPv4 multicast routing forwarding entries are displayed by default.

Command Mode

Global configuration mode/Interface configuration mode/Privileged EXEC mode

Usage Guide

The three parameters in this command are optional, wherein the source address and group address must be specified at the same time.

- If no source address and group address are specified, all mfc entries are displayed.
- When the source address and group address are specified only, the entries corresponding to the source and group addresses are displayed.

Configuration Examples

The following example shows all IPv4 layer-3 multicast routing forwarding entries with source address 20.0.1.30.

```
Ruijie#show ip mrf mfc 20.0.1.30 233.3.3.3
Multicast Routing and Forwarding Cache Table
(20.0.1.30, 233.3.3.3)
 FAST_SW, SWTCHED, MIN_MTU: 1500, MIN_MTU_IFINDEX: 4099, WRONG IF: 0
 Incoming interface: VLAN 1[4097]
Outgoing interface list:
VLAN 3 (1)
```

The fields in the execution of the **show ip mrf mfc** command are described in the following table.

Field	Description
20.0.1.30	Source address of the entry.
233.3.3.3	Group address of the entry.
FAST_SW	The Flag shows whether to allow the fast forwarding or not. If the non-Ethernet interface, ppp, hdlc and frame relay exist, no fast forwarding entry generates.
SWTCHED	Indicate whether the entry configuration on the next layer forwarding table has done not not.
MIN_MTU MTU	The minimum MTU of the entry.
MIN_MTU_IFINDEX	The interface index with the minimum MTU value.
WRONG IF	The statistics number of the multicast data packets received on the wrong incoming interface.
Incoming interface	Incoming interface of the entry.
VLAN 3 (1)	The layer-3 outgoing interface of the entry is VLAN3. 1 for the ttl threshold of this layer-3 interface.

Platform

Description N/A

1.13 show ip mroute

Use this command to display the multicast forwarding table.

show ip mroute [*group-or-source-address* [*group-or-source-address*]] [**dense** | **sparse**] [**summary** | **count**]

Parameter Description

Parameter	Description
group-address	Multicast group IP address
group-or-source-address	Multicast or source IP address
group-or-source-address	Multicast or source IP address. The two addresses must not be the multicast addresses or source addresses at the same time.
dense	Displays PIM-DM multicast routing table.
sparse	Displays PIM-SM multicast routing table.
summary	Displays the summary of the multicast routing table.
count	Displays the count of the multicast routing table.

Command Mode Global configuration mode/Interface configuration mode/Privileged EXEC mode

Configuration The following example displays the information of the multicast routing table:

Examples

```
Ruijie# show ip mroute
IP Multicast Routing Table
Flags: I - Immediate Stat, T - Timed Stat, F - Forwarder installed
Timers: Uptime/Stat Expiry
Interface State: Interface (TTL)
(10.10.1.52, 224.0.1.3), uptime 00:00:31, stat expires 00:02:59
Owner PIM-SM, Flags: TF
Incoming interface: FastEthernet 2/1
Outgoing interface list:
FastEthernet 1/3
```

The following example displays the information of a specific entry:

```
Ruijie# show ip mroute 10.10.1.52 224.0.1.3
IP Multicast Routing Table
Flags: I - Immediate Stat, T - Timed Stat, F - Forwarder installed
Timers: Uptime/Stat Expiry
Interface State: Interface (TTL)
(10.10.1.52, 224.0.1.3), uptime 00:03:24, stat expires 00:01:28
Owner PIM-SM, Flags: TF
Incoming interface: FastEthernet 2/1
Outgoing interface list:
FastEthernet 1/3
```

The following example displays the count of the routing table:

```
Ruijie# show ip mroute count
IP Multicast Statistics
Total 1 routes using 132 bytes memory
Route limit/Route threshold: 2147483647/2147483647
Total NOCACHE/WRONGVIF/WHOLEPKT recv from fwd: 1/0/0
Total NOCACHE/WRONGVIF/WHOLEPKT sent to clients: 1/0/0
Immediate/Timed stat updates sent to clients: 0/0
Reg ACK recv/Reg NACK recv/Reg pkt sent: 0/0/0
Next stats poll: 00:01:10
Forwarding Counts: Pkt count/Byte count, Other Counts: Wrong If pkts
Fwd msg counts: WRONGVIF/WHOLEPKT recv
Client msg counts: WRONGVIF/WHOLEPKT/Imm Stat/Timed Stat sent
Reg pkt counts: Reg ACK recv/Reg NACK recv/Reg pkt sent
(10.10.1.52, 224.0.1.3), Forwarding: 2/19456, Other: 0
Fwd msg: 0/0, Client msg: 0/0/0/0, Reg: 0/0/0
```

The following example displays the summary of the routing table:

```
Ruijie# show ip mroute summary
IP Multicast Routing Table
Flags: I - Immediate Stat, T - Timed Stat, F - Forwarder installed
```

```
Timers: Uptime/Stat Expiry
Interface State: Interface (TTL)
(10.10.1.52, 224.0.1.3), 00:01:32/00:03:20, PIM-SM, Flags: T
```

Field	Description
Flags	I-Immediate statistic T-Timed statistic F-Already set to the forwarding table
Timers:Uptime/Stat Expiry	Time when the entry is created. Time when it is aged.
Interface State	Interface state.
Owner	Owner of the entry, which may be a multicast routing protocol
Incoming interface	Expected packet incoming interface. If the actual incoming interface does not match it, the packets will be discarded.
Outgoing interface list	Outgoing interface list; the packets will be forwarded on the interfaces in the list.
Forwarding Counts: Pkt count/Byte count,	Forwarding count: packet count/byte count forwarded by the entry
Other Counts: Wrong If pkts	Count of the packets received from the wrong incoming interface.

Related Commands

Command	Description
ip multicast-routing	Enables the multicast routing forwarding.
ip pim dense-mode	Enables the PIM-DM on the interface.
ip pim sparse-mode	Enables the PIM-SM on the interface.

Platform Description N/A

1.14 show ip mroute static

Use this command to display the IPv4 static multicast routing information.

show ip mroute static

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Global configuration mode/Interface configuration mode/Privileged EXEC mode

Usage Guide Use this command to show the user-configured static multicast routing. In the same conditions, the priority of the static multicast routing is higher than the dynamically learned.

Configuration Examples The following example displays the information of the user-configured static multicast routing:

```
Ruijie#show ip mroute static
Mroute: 172.16.0.0, RPF neighbor: 172.30.10.13
 Protocol: , distance: 0
```

Platform Description N/A

1.15 show ip mvif

Use this command to show the basic information of the multicast interface.

show ip mvif { *interface-type interface-number* }

Parameter Description

Parameter	Description
interface-type interface-number	Interface Type and number

Command Mode Global configuration mode/Interface configuration mode/Privileged EXEC mode

Configuration Examples The following example shows the basic information of the multicast interface of svil.

```
Ruijie#show ip mvif vlan 1
Interface Vif Owner TTL Local Remote Uptime
 Idx Module Address Address
VLAN 1 1 PIM-DM 2 192.168.1.1 0.0.0.0 00:13:16
```

Platform Description N/A

1.16 show ip rpf

Use this command to display the RPF information of the specified source IP address.

show ip rpf {*source-address* [*group-address*] [**rd** *route-distinguisher*]} [**metric**]

Parameter Description

Parameter	Description
source-address	Specified source IP address

group-address	Specified source IP address
rd *route-disting unisher*	Uses the RD provy for the searching.
metric	Displays the metric of the MDT-SAFI route.

Command Mode Global configuration mode/Interface configuration mode/Privileged EXEC mode

Configuration Examples

The following example displays the information of the RPF to 192.168.1.54:

```
Ruijie# show ip rpf 192.168.1.54
RPF information for 192.168.1.54
RPF interface: VLAN 1
RPF neighbor: 0.0.0.0
RPF route: 192.168.1.0/24
RPF type: unicast (connected)
RPF recursion count: 0
Doing distance-preferred lookups across tables
Distance: 0
Metric: 0 RPF information for 192.168.1.54
RPF interface: VLAN 1
RPF neighbor: 0.0.0.0
RPF route: 192.168.1.0/24
RPF type: unicast (connected)
RPF recursion count: 0
Doing distance-preferred lookups across tables
Distance: 0
Metric: 0
```

Platform Description N/A

1.17 show msf msc

Use this command to display IPv4 multi-layer multicast forwarding table.

show msf msc [*soure-address*] [*group-address*] [*vlan-id*]

Parameter Description

Parameter	Description
source-address	Specified source IP address of the multi-layer multicast forwarding table.
group-address	Specified group address of the multi-layer multicast forwarding table.
vlan-id	The VLAN ID where the incoming interface of the multi-layer multicast forwarding table is. 4096 indicates a routed port.

Defaults All IPv4 multi-layer multicast forwarding entries are displayed by default.

Command Mode	Global configuration mode/Interface configuration mode/Privileged EXEC mode
Usage Guide	The three parameters in this command are optional. If no source address and group address are specified, all mfc entries are displayed. ● If only the source address is specified as s1, all msc entries with source address 1 are displayed. ● If the source address is specified as s1 and the group address as g1, all corresponding msc entries are displayed. ● If the source address is specified as s1, the group address as g1 and the vlan id as v1, all corresponding msc entries are displayed. ● Each parameter shall be input in order. Only when the parameter in front has been configured, the following one could be set.

Configuration Examples	The following example displays the IPv4 layer-3 multicast forwarding entries with source IP address 192.168.195.25:
	`Ruijie# show msf msc 192.168.195.25`
	`Multicast Switching Cache Table`
	`(192.168.195.23, 233.3.3.3, 1), SYNC, MTU:0, 1 OIFs`
	`VLAN 1(0): 1 OPORTs, REQ: DONE`
	`OPORT 6, IGMP-SNP, REQ: DONE`
	The fields in the execution of the **show mrf mfc** command are described in the following table.

Field	Description
192.168.195.23	Source address of the entry.
233.3.3.3	Group address of the entry.
1	Vlan id where the incoming interface of the entry is.
SYNC	The entry has been synchronized to the hardware.
MTU	MTU value
OIFs	Layer-3 outgoing interface number.
VLAN1(0)	The vlan where the layer-3 outgoing interface oif is.
1 OPORTs	The number of layer-2 port in the layer-3 outgoing oif.
REQ: DONE	This oif configuration on the hardware has done.
OPORT 6	The layer-2 port in the oif with index 6.
IGMP-SNP	This port is created by the IGMP SNOOPING protocol. This value can also be the PIM-SNP, which means this port is created by the PIM SNOOPING protocol. And the ROUTER means this port is created by the layer-3 protocol.
REQ: DONE	The port configuration on the hardware has done.

Platform Description N/A

1.18 show msf nsf

Use this command to display the configuration of continuous multicast forwarding.

show msf nsf

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Global configuration mode/Interface configuration mode/Privileged EXEC mode

Configuration Examples

The following example displays the configuration of continuous multicast forwarding.

```
Ruijie# show msf nsf
Multicast HA Parameters
-------------------------------------------------+------+
protocol convergence timeout 120 secs
flow leak interval 20 secs
Ruijie#
```

Related Commands

Command	Description
msf nsf	Configures the multicast NSF parameter.

Platform

Description N/A

2 IPv6 Multicast Routing Commands

2.1 clear ipv6 mroute

Use this command to remove the specific or all IPv6 multicast forwarding entries.

clear ipv6 mroute { ***** | *v6group-address* [*v6source -address*]}

Parameter Description

Parameter	Description
*	Removes all the forwarding information in the IPv6 multicast route table.
v6group-address	Group IPv6 address of IPv6 multicast routes.
v6source-address	Source IPv6 address of multicast routess.

Command Mode Privileged EXEC mode

Configuration Examples The following example removes all the multicast routing entries.

```
Ruijie# clear ip mroute *
```

Related Commands

Command	Description
show ipv6 mroute	N/A
clear ipv6 mroute statistics	N/A

2.2 clear ipv6 mroute statistics

Use this command to remove the statistics of IPv6 multicast routes.

clear ipv6 mroute statistics {***** | *v6group-address* [*v6source -address*]}

Parameter Description

Parameter	Description
*	Removes all the forwarding entries in the multicast route table.
v6group-address	Group IPv6 address of IPv6 multicast routes
v6source-address	Source IPv6 address of multicast route

Command Mode Privileged EXEC mode

Usage Guide This command allows you to clear the statistics information of IPv6 multicast routes.

Configuration Examples The following example clears all the statistical information of the multicast routing entries.

```
Ruijie# clear ip mroute statistics *
```

Related

Command	Description

Commands		
	show ipv6 mroute	Displays the multicast route forwarding information.
	clear ipv6 mroute	Clears the multicast route forwarding information.

2.3 ipv6 mroute

Use this command to configure static IPv6 multicast routes. Use the **no** form of this command to restore the default setting.

ipv6 mroute *ipv6-prefix/prefix-length* [*protocol as-number*] {*v6rpf-addrress* | *interface-type interface-number*} [*distance*]

no ipv6 mroute *ipv6-prefix/prefix-length* [*protocol as-number*] { *v6rpf-addrress* | *interface-type interface-number*} [*distance*]

Parameter Description

Parameter	Description
ipv6-prefix/prefix-length	Source IPv6 address of the multicast route.
mask	Mask of the source IPv6 address.
protocol	(Optional) The unicast routing protocol being used.
v6rpf-address	Incoming interface of the multicast route
interface-type interface-number	Interface type and interface ID.
distance	Management distance used to determine whether to use the route for RPF routing, ranging from 1 to 255. The default value is 0.

Defaults The static IPv6 multicast routing is not configured by default.

Command Mode Global configuration mode.

Usage Guide

This command is used to configure the route for the purpose of RFF check. Note that the configured route is prior to the route learned in the unicast form.

If the outgoing direction of static multicast route but not the next-hop IP shall be specified, the outgoing direction must be of the point-to-point type.

The RPF rule is that when a best multicast route from the multicast list is selected, if the BGP multicast route and the static multicast route coexist, the latter one takes the precedence; select a best unicast route from the unicast list and compare the mask length of the best multicast and unicast routes, the one with greater mask length becomes the RPF route; if both mask length are the same, you shall compare the distance, and the one with smaller distance becomes the RPF route; if both distance values are the same, the multicast route becomes the RPF route.

Configuration Examples The following example allows the static multicast route 2233::/64 to pass 3333::3333:

```
Ruijie(config)# ipv6 mroute 2233::/64 3333::3333
```

2.4 ipv6 multicast boundary

Use this command to configure the boundary of an IPv6 multicast group. Use the **no** form of this command to restore the default setting.

ipv6 multicast boundary *access-list-name*

no ipv6 multicast boundary *access-list-name*

Parameter Description

Parameter	Description
access-list-name	Access list associated with the multicast boundary.

Defaults

The boundary of a specified IPv6 multicast group is not defined by default.

Command Mode

Interface configuration mode

Usage Guide

Note that the ACL associated with the multicast boundary is either standard ACL or extended ACL. But the extended ACL only match the destination IPv6 address.

⚠ This command filters MLD, PIM-SMv6 packets of the specified IPv6 address range. Multicast packets will not be received and sent through the interface of the boundary.

Configuration Examples

The following example configures svi1 as the boundary of all IPv6 multicast groups.

```
Ruijie(config)# ip access-list mul-boun
Ruijie(config-std-nacl)# permit ip 233.3.3.0 0.0.0.255
Ruijie(config-std-nacl)#exit
Ruijie(config)# interface vlan 1
Ruijie(config-if)# ip multicast boundary mul-boun
```

2.5 ipv6 multicast route-limit

Use this command to limit the number of the entries that can be added to the IPv6 multicast routing table.

Use the **no** form of this command to restore the default setting.

ipv6 multicast route-limit *limit* [*threshold*]

no ipv6 multicast route-limit *limit* [*threshold*]

Parameter Description

Parameter	Description
limit	The number of the entries that can be added to the IPv6 multicast routing table is 1 to 65,536.
threshold	(Optional) Number of IPv6 multicast routes at which alarms will be triggered.

Defaults

The default value of *limit* is 1,024.

The default value of *threshold* is 65,536.

Command Mode Global configuration mode

Usage Guide

This command is used to restrict the number of route adding to the IPv6 multicast table.

The hardware resources of different devices are limited. The routes exceeding the hardware resource will be forwarded by software, which leads to lower product performance.

Packets that exceed this value will be discarded.. If you want to use the PIM protocol to create more than 128 entries in the multicast routing table, you are advised to set the CPP value of PIM packets to the number of entries in the multicast routing table. If you want to use the IGMP protocol to create more than 1000 entries in the multicast routing table, you are advised to set the CPP value of IGMP packets to the number of entries in the multicast routing table.

Configuration Examples The following example sets the route limit to 500 and the warning value 90.

```
Ruijie(config)# ipv6 multicast route-limit 500 90
```

2.6 ipv6 multicast-routing

Use this command to enable the IPv6 multicast routing forwarding.
Use the **no** form of this command to restore the default setting.
ipv6 multicast-routing
no ipv6 multicast-routing

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default

Command Mode Global configuration mode

Usage Guide

Use this command to enable the IPv6 multicast routing forwarding. With this function disabled, the multicast protocol cannot be enabled.

This command must be configured to enable the IPv6 multicast routing forwarding. This function conflicts with IGMP Snooping.

Configuration Examples The following example enables the IPv6 multicast routing forwarding.

```
Ruijie(config)# ipv6 multicast-routing
```

2.7 ipv6 multicast rpf longest-match

Use the RPF rule to select the static multicast route, MBGP route and the unicast route for the purpose of RPF check from the static multicast route list, the MBGP route list and the unicast route list.
Use this command to select one route with the longest-matched mask from the above-mentioned three routes. If the priority values of all three routes are the same, the routes will be selected in order of static multicast route, MBGP route and unicast route.
Use the **no** form of this command to restore the default setting.
ipv6 multicast rpf longest-match
no ipv6 multicast rpf longest-match

Parameter Description	**Parameter**	**Description**
	N/A	N/A

Defaults	Use the RPF rule to select the static multicast route, MBGP route and the unicast route for the purpose of RPF check from the static multicast route list, the MBGP route list and the unicast route list. Use this command to select one route, which is prior to the other two routes, with the longest-matched mask from the above-mentioned three routes. If the priority values of all three routes are the same, the routes will be selected in order of static multicast route, MBGP route and unicast route.
Command Mode	Global configuration mode
Usage Guide	N/A.
Configuration Examples	The following example selects one route with the longest-matched mask from the above-mentioned three routes. `Ruijie(config)# ipv6 multicast rpf longest-match`

2.8 ipv6 multicast static

Use this command to enable flow control for multicast packets on the Layer 2 interface. Use the **no** form of this command to restore the default setting.
ipv6 multicast static *source-address group-address interface-type interface-number*
no ipv6 multicast static *source-address group-address interface-type interface-number*

Parameter Description	**Parameter**	**Description**
	source-address	Source IPv6 address
	group-address	IPv6 address of the multicast group

interface-type interface number	Layer 2 interface on which multicast packets are allowed to forward

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide You can configure more than one command (or more than one interface) for a multicast flow. With flow control enabled, the multicast flow can only be forwarded through these configured interfaces.
This command controls the forwarding of multicast flows on an interface without any direct influence on the packet processing of multicast protocols. However, the action of a multicast protocol (for instance, PIM-SMv6) may be affected because some features of the multicast protocol are driven by multicast flows.

Configuration Examples The following example configures forwarding multicast flows (2222::3333, ff66::100) through GigabitEthernet 2/6 and FastEthernet 3/2.

```
Ruijie(config)# ipv6 multicast static 2222::3333 ff66::100 G2/6
Ruijie(config)# ipv6 multicast static 2222::3333 ff66::100 F3/2
```

2.9 msf6 nsf

Use this command to configure parameters for multicast non-stop forwarding.
Use the **no** form of this command to restore the default setting.
msf6 nsf { **convergence-time** *time* | **leak** *interval* }
no msf6 nsf { **convergence-time** | **leak** }

Parameter Description

Parameter	Description
convergence-time *time*	Maximum duration for which the system waits for multicast protocol convergence. The unit is second. The value ranges from 0 to 3600.
leak *interval*	Interval at which multicast packets are leaked. The unit is second. The value ranges from 0 to 3600.

Defaults The default convergence-time is 20 and leak interval is 30.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example sets the maximum duration for which the system waits for multicast protocol convergence:

```
Ruijie (config)# msf6 nsf convergence-time 300
```

The following example sets the interval at which multicast packets are leaked.

```
Ruijie(config)# msf6 nsf leak 200
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.10 show ipv6 mroute

Use this command to display the IPv6 multicast forwarding table.

show ipv6 mroute [*group-or-source-address* [*group-or-source-address*]] [**dense** | **sparse**] [**summary** | **count**]

Parameter Description

Parameter	Description
v6group-address	Multicat group IPv6 address
v6source-address	Multicast source IPv6 address
summary	Displays the summary of the multicast routing table.
count	Displays the count of the multicast routing table.

Command Mode Privileged EXEC mode

Configuration Examples

The following example displays all information of the IPv6 multicast routing table:

```
Ruijie# show ipv6 mroute
IPv6 Multicast Routing Table
Flags: I - Immediate Stat, T - Timed Stat, F - Forwarder installed
Timers: Uptime/Stat Expiry
Interface State: Interface (TTL)
(2222::1234, ff56::1234), uptime 00:00:31, stat expires 00:02:59
Owner PIM-SMv6, Flags: TF
Incoming interface: FastEthernet 2/1
Outgoing interface list:
FastEthernet 1/3
```

The following example displays the count of the routing table:

```
Ruijie# show ipv6 mroute count
IPv6 Multicast Statistics
Total 1 routes using 168 bytes memory
Route limit/Route threshold: 1024/2147483647
Total NOCACHE/WRONGVIF/WHOLEPKT recv from fwd: 77/147/0
Total NOCACHE/WRONGVIF/WHOLEPKT sent to clients: 77/147/0
Immediate/Timed stat updates sent to clients: 0/29
Reg ACK recv/Reg NACK recv/Reg pkt sent: 0/0/0
Next stats poll: 00:00:09
Forwarding Counts: Pkt count/Byte count, Other Counts: Wrong If pkts
Fwd msg counts: WRONGVIF/WHOLEPKT recv
Client msg counts: WRONGVIF/WHOLEPKT/Imm Stat/Timed Stat sent
Reg pkt counts: Reg ACK recv/Reg NACK recv/Reg pkt sent
(2222::1234, ff56::1234), Forwarding: 1/0, Other: 0
 Fwd msg: 0/0, Client msg: 0/0/0/0, Reg: 0/0/0
```

The following example displays the summary of the routing table:

```
Ruijie# show ipv6 mroute summary
IPv6 Multicast Routing Table
Flags: I - Immediate Stat, T - Timed Stat, F - Forwarder installed
Timers: Uptime/Stat Expiry
Interface State: Interface (TTL)
(2222::1234, ff56::1234), 00:00:28/00:03:25, PIM-SMv6, Flags: TF
```

2.11 show ipv6 mroute static

Use this command to display the static IPv6 multicast routing information.

show ipv6 mroute static

Parameter Description	**Parameter**	**Description**
	N/A	N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to display the statically-configured multicast route. Under the same condition, the static multicast route is prior to the unicast route.

Configuration Examples The following example displays the static IPv6 multicast routing information.

```
Ruijie#show ipv6 mroute static
Mroute: 2233::/64, RPF neighbor: 3333::3333
Protocol: , distance: 0
```

2.12 show ipv6 mvif

Use this command to display the basic information of the multicast interface.

show ipv6 mvif { *interface-type interface-number* }

Parameter Description

Parameter	Description
interface-type interface-number	Interface Type and number

Command Mode Privileged EXEC mode

Configuration Examples The following example displays the basic information of the multicast interface of svil.

```
Ruijie#show ipv6 mvif
Interface    Mif Owner    Uptime
      Idx Module
Register     0     03d03h09m
VLAN 1     1  PIMSMV6   03d03h09m
```

2.13 show ipv6 rpf

Use this command to display the RPF information of the specified source IPv6 address.

show ipv6 rpf {*v6source-address*}

Parameter Description

Parameter	Description
v6source-address	Specified source IPv6 address

Command Mode Privileged EXEC mode

Configuration The following example displays the information of the RPF to 2222::3333:

Examples

```
Ruijie# show ipv6 rpf 2222::3333
 RPF interface: GigabitEthernet 0/1
 RPF neighbor: ::
 RPF route: 2222::/64
 RPF type: unicast (connected)
 RPF recursion count: 0
 Doing distance-preferred lookups across tables
 Distance: 0
 Metric: 0
```

2.14 show ipv6 mrf6 mfc

Use this command to display the IPv6 multicast forwarding table.

show ipv6 mrf6 mfc [*v6soure-address v6group-address*]

Parameter Description

Parameter	Description
v6group-address	IPv6 address of a multicast group.
v6source-address	IPv6 address of a multicast source.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to display the entries of the multicast data stream forwarding table. The forwarding table displayed in the command output is basically consistent with the multicast routing forwarding table displayed in the command output of **show ipv6 mroute**. The difference is that in the multicast data stream forwarding table, the protocols based on which entries are generated are not recorded.

The two parameters are optional. The source address and group address must be specified together.

If the two parameters are not specified, all mrf table entries will be displayed.

If the two parameters are specified, the mrf entries of the specified source address and group address are displayed.

Configuration Examples The following example displays the layer-3 multicast forwarding table entries of IPv6 (the source address is 2000::1 and the group address is FF55::1).

```
Ruijie#show ipv6 mrf6 mfc 2000::1 FF55::1
Multicast Routing and Forwarding Cache6 Table
(2000::1, FF55::1)
 FAST_SW, SWTCHED, MIN_MTU: 1500, MIN_MTU_IFINDEX: 4099, WRONG IF: 0
 Incoming interface: VLAN 1[4097]
 Outgoing interface list:
VLAN 3 (1)
```

Field	Description
2000::1	Source address of entries.
FF55::1	Group address of entries.
FAST_SW	Indicates whether the entries allow fast forwarding, that is, whether the entries can be forwarded by using hardware or software forwarding. If the entries include an interface that does not support the multicast function (for example, the GRE tunnel interface), fast forwarding is not allowed.
SWTCHED	Indicates whether the entries have been placed in the forwarding table on the next layer.
MIN_MTU MTU	Minimum MTU value of entries.
MIN_MTU_IFINDEX	Index of the interface that has the minimum MTU value.
WRONG IF	Number of multicast packets sent from the wrong inbound interface.
VLAN 1[4097]	Indicates that the rpf inbound interface is VLAN1. 4097 indicates the IFINDEX of the interface.
VLAN 3 (1)	Indicates that the layer-3 outbound interface of the entries is VLAN 3. 1 indicates the ttl threshold of the layer-3 interface.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.15 show msf6 msc

Use this command to display entries of the IPv6 routing multicast data stream exchange table.

show msf6 msc [*v6soure-address*] [*v6group-address*] [*vlan-id*]

Parameter Description

Parameter	Description
v6group-address	IPv6 address of a multicast group.
v6source-address	IPv6 address of a multicast source.
vlan-id	VLAN ID of the inbound interface of the entries. If the value is greater than 4096, the interface is a routing interface.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to display entries of the IPv6 routing multicast data stream exchange table. The three parameters are all optional.

If only the source address is specified and set to s1, msc entries of this source address will be

displayed.

If the source address is set to s1 and the group address is set to g1, msc entries of this source address and group address will be displayed.

If the source address is set to s1, the group address is set to g1, and the VLAN ID is set to v1, then msc entries that meet these three conditions will be displayed.

You must specify these three parameters in sequence. That is, you must specify the current parameter before specifying the next.

Configuration Examples The following example displays entries of the IPv6 routing multicast data exchange table of source address 2000::1:

```
Ruijie# show msf6 msc 2000::1
Multicast Switching Cache Table
(2000::1, FF55::1, 1), SYNC, MTU:0, 1 OIFs
 VLAN 4094(8190): 1 OPORTs, REQ: DONE
OPORT 6, MLD-SNP, REQ: DONE
```

Field	Description
2000::1	Source address of entries.
FF55::1	Group address of entries.
1	VLAN ID of the inbound interface of the entries.
SYNC	Indicates that the entries have been synchronized to the bottom-layer hardware.
MTU	MTU value of the entries.
OIFs	Number of layer-3 interfaces of the entries.
VLAN 4094(8190)	Indicates a layer-3 outbound interface VLAN xxx (yyy). If the layer-3 interface is an SVI interface, the value of xxx is the VLAN vid of the SVI, and the value of yyy is the VLAN vid+4096. If the layer-3 interface is a routing interface, the value of xxx is the IFINDEX of the interface+4096, and the value of yyy is the IFINDEX. This facilitates the index management of all layer-3 interfaces.
1 OPORTs	Number of layer-2 interfaces owned by this layer-3 exit oif.
REQ: DONE	Indicates that the oif has been set to the bottom-layer hardware. The value may be: Waiting to be added. Usually it is waiting for a data stream to be triggered. DEL: Being deleted. DONE: Synchronized to the hardware.
OPORT 6	Indicates that the oif has a layer-2 interface with the interface number of 6.
MLD-SNP	Indicates that the interface is created based on MLD SNOOPING. Alternatively, the value may be one of the following options: ROUTER: Indicates that the interface is created based on the layer-3 protocol. INHERIT_FM_MLD_SNP: Indicates that the interface is created based on the MLD SNOOPING protocol inherited from other entries.
REQ: DONE	Indicates that the interface has been set to the bottom-layer hardware. The value may be: ADD: Waiting to be added. Usually it is waiting for a data stream to be triggered. DEL: Being deleted. DONE: Synchronized to the hardware.

Related Commands	Command	Description
	N/A	N/A

Platform Description This command is supported on only switches.

2.16 show msf6 nsf

Use this command to display the multicast non-stop forwarding configuration.

show msf6 nsf

Parameter Description	Parameter	Description
	N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the multicast non-stop forwarding configuration.

```
Ruijie# show msf6 nsf
Multicast HA Parameters
-----------------------------------------------+----------+
protocol convergence timeout    120 secs
flow leak interval       20 secs
```

Related Commands	Command	Description
	msf6 nsf	Multicast non-stop forwarding.

Platform Description This command is supported on only switches.

3 IGMP Commands

3.1 clear ip igmp group

Use this command to clear dynamic group member information obtained from the response messages in the IGMP buffer.

clear ip igmp group [*group-address* [*interface-type interface-number*]]

Parameter Description

Parameter	Description
group-address	32-bit multicast group IP address, namely Category D address. 8 bits are in one group in decimal form. Groups are separated with dots.
interface-type	Interface type
interface-number	Interface number

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide The IGMP buffer includes a list that contains the multicast groups that the hosts in the direct subnet join. If the device joins a group, this group will be included in this list. To delete all the entries from the IGMP buffer, use the **clear ip igmp group** command without parameters.

Configuration Examples The following example clears all group entries.

```
Ruijie# clear ip igmp group
```

Related Commands

Command	Description
show ip igmp groups	N/A
show ip igmp interface	N/A

Platform Description N/A

3.2 clear ip igmp interface

Use this command to clear the IGMP entry for the interface.

clear ip igmp interface *interface-type interface-number*

Parameter Description

Parameter	Description

interface-type	Interface type
interface-number	Interface number

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to clear the information on the interface that is generated when IGMP is configured.

Configuration Examples The following example clears the IGMP entry for the interface.

```
Ruijie# clear ip igmp interface gigabitEthernet 4/1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.3 ip igmp access-group

Use this command to control a multicast group on the interface.
Use the **no** or **default** form of this command to restore the default setting.
ip igmp access-group *access-list*
no ip igmp access-group
default ip igmp access-group

Parameter Description

Parameter	Description
access-list	Name of access control list in the range from 1 to 199, 1300 to 2699, or characters.

Defaults This command is disabled by default.

Command Mode Interface configuration mode

Usage Guide You can add several multicast groups into the specific interfaces of the host in a subnet. These multicast groups can be controlled using **ip igmp access-group**.

⚠ With the IGMPv3 enabled, when the multicast group accesses the control command, the

extended ACL is associated. If the IGMP report information received is (S1,S2,S3…Sn,G), the corresponding ACL will be used by this command to the (0, G) for the matching check. In order to use this command normally, the (0,G) must be configured explicitly for the extended ACL so as to implement the normal filtering of (S1, S2, S3…Sn,G).

Configuration Examples The following example adds the interface Ethernet 0/1 to the group 225.2.2.2 .

```
Ruijie# configure terminal
Ruijie(config)# access-list 1 permit 225.2.2.2 0.0.0.0
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if)# ip igmp access-group 1
```

The following example associates the group control list with the extended ACL on the interface Eth 0/1 which only processes the igmp protocol packets with source address 1.1.1.1 and group address 233.3.3.3.

```
Ruijie# configure terminal
Ruijie(config)# ip access-list extended ext_acl
Ruijie(config-ext-nacl)# permit ip host 1.1.1.1 host 233.3.3.3
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if)# ip igmp access-group ext_acl
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.4 ip igmp immediate-leave group-list

In the IGMPversion2 and IGMPversion3 versions, use this command to shorten the delay of leaving a group. This command is used when a single receiving host is connected to a single interface.
Use the **no** or **default** form of this command to restore the default setting.
ip igmp immediate-leave group-list *access-list*
no ip igmp immediate-leave
default ip igmp immediate-leave

Parameter Description

Parameter	Description
access-list	Name of access control list

Defaults This function is disabled by default.

Command Interface configuration mode

Mode

Usage Guide If this command is not configured, the device will send a particular group query message upon receiving the leaving message from the interface. When the host response is timeout, the device stops forwarding packets to this interface. The length of timeout depends on the query interval of the last member and IGMP robustness variable. The default value is 2s.
If this command is configured, the device does not send a particular group query message upon receiving the leaving message from the interface. Instead, it directly removes this interface from the IGMP buffer and notifies the IGMP protocol. This will shorten the time significantly.

Configuration Examples The following example provides the immediate leaving function for some multicast groups. Certainly, you must make sure each interface of these multicast groups have one group member only.

```
Ruijie# configure terminal
Ruijie(config)# access-list 1 permit 225.192.20.0 0.0.0.255
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if)# ip igmp immediate-leave group-list 1
Ruijie(config-if)# exit
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.5 ip igmp join-group

Use this command to configure the interface of the switch with host activities and adds it to a multicast group, so that the sub-switch can learn the corresponding group information. You can use this command to add an interface to a group.
Use the **no** or **default** form of this command to restore the default setting.
ip igmp join-group *group-address*
no ip igmp join-group *group-address*
default ip igmp join-group *group-address*

Parameter Description

Parameter	Description
group-address	Multicast group IP address

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide This command enables the host activities for the IGMP interface. When the host function is enabled, the interface can initiate the report message and respond to the query message.
If the IGMP function is enabled on the interface, the interface can initiate the report message, so that the interface can learn the configured group members.
You can use this command to add an interface to a group.

Configuration Examples The following example adds a host group member manually.

```
Ruijie# configure terminal
Ruijie(config)# interface fast 0/1
Ruijie(config-if)# ip igmp join-group 233.3.3.3
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.6 ip igmp last-member-query-count

Use this command to configure the value of **last-member-query-count**.
Use the **no** or **default** form of this command to restore the default setting.
ip igmp last-member-query-count *number*
no ip igmp last-member-query-count
default ip igmp last-member-query-count

Parameter Description

Parameter	Description
number	Value of the last member query count in the range from 2 to 7.

Defaults The default is 2.

Command Mode Interface configuration mode

Usage Guide When the interface of the device receives an IGMPv2 group leaving message, the device waits for duration of query interval multiplying **last-member-query-count** time. The device will delete information about this group member if no group member report is received within the waiting time.

Configuration Examples The following example sets the value of last member query count to 3.

```
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0
Ruijie(config-if)# ip igmp last-member-query-count 3
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.7 ip igmp last-member-query-interval

Use this command to set the time interval of sending the group query message.

Use the **no** or **default** form of this command to restore the default setting.

ip igmp last-member-query-interval *interval*

no ip igmp last-member-query-interval

default ip igmp last-member-query-interval

Parameter Description

Parameter	Description
interval	The interval sending the group query message in the range from1 to 255 in the unit of 0.1 second.

Defaults The default is 10.

Command Mode Interface configuration mode

Usage Guide When the interface of the device receives an IGMPv2 group leaving message, the device waits for duration of query interval multiplying **last-member-query-count** time. The device will delete information about this group member if no group member report is received within the waiting time.

Configuration Examples The following example sets the interval of sending the group query message to 20 seconds.

```
Ruijie# configure terminal
Ruijie(config)# interface eth 0
Ruijie(config-if)# ip igmp last-member-query-interval 200
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.8 ip igmp limit

Use this command to globally set the maximum number of IGMP group records.
Use the **no** or **default** form of this command to restore the default setting.
ip igmp limit *number* [**except** *access-list*]
no ip igmp limit
default ip igmp limit

Parameter Description

Parameter	Description
number	Maximum number of IGMP states, depending on devices
except	(Optional) Prevents the groups of the access list from taking part in calculation.
access-list	(Optional) Access list name

Defaults The default is 65536.

Command Mode Global configuration mode/ Interface configuration mode

Usage Guide Use this command to globally configure the maximum number of IGMP group records. The messages of the members exceeding the threshold will not be saved in the IGMP buffer and will not be forwarded.
This command can be configured globally or on the interface The messages of the members will be ignored if they exceed the interface or global configuration.

Configuration Examples The following example sets the maximum number to 300.

```
Ruijie(config) # ip igmp limit 300
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.9 ip igmp mroute-proxy

Use this command to configure an interface as a mroute-proxy interface that can transmit messages to its uplink ports.
Use the **no** or **default** form of this command to restore the default setting.
ip igmp mroute-proxy *interfname*

no ip igmp mroute-proxy
default ip igmp mroute-proxy

Parameter Description

Parameter	Description
interfname	Name of the relevant uplink interface

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide After an uplink interface is configured as **proxy-service** interface, the interface can forward the IGMP messages sent by other members.

Configuration Examples The following example configures an interface to **mroute-proxy** interface.

```
Ruijie(config-if)# ip igmp mroute-proxy fa 0/1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.10 ip igmp proxy-service

Use this command to enable the service function of all downlink **mroute-proxy** ports. If you run this command on an interface, the interface becomes the uplink port of the corresponding **mroute-proxy** that associates its downlink ports and maintains the group information reported by the downlink ports. Use the **no** or **default** form of this command to restore the default setting.
ip igmp proxy-service
no ip igmp proxy-service
default ip igmp proxy-service

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Interface configuration mode

Mode

Usage Guide The command can configure at most 32 proxy-service ports. The number of interface with IGMP Proxy enabled is limited by the supported multicast interface number. When receiving a query message, the **proxy-service** port responds according to the IGMP group member information maintained by the port itself. The member information maintained by the **proxy-service** port is collected from the interface configured with **mroute-proxy**. Therefore, if a port is configured with proxy-service, the port performs the host activities, but not the device activities.
If **switch port** operation is performed on an interface with proxy-service command configured, the **ip igmp mroute-proxy interface** command configured on the associated downlink ports is automatically deleted.

Configuration Examples The following example configures an interface to the **proxy-service** module.

```
Ruijie(config-if)# ip igmp proxy-service
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.11 ip igmp query-interval

Use this command to configure the query interval of an ordinary member.
Use the **no** or default form of this command to restore the default setting.
ip igmp query-interval *seconds*
no ip igmp query-interval
default ip igmp query-interval

Parameter Description

Parameter	Description
seconds	Query interval of ordinary member, in the range is from 1 to 18000 in the unit of seconds.

Defaults The default is 125 seconds.

Command Mode Interface configuration mode

Usage Guide The time to query an ordinary member can be changed by configuring the query interval of the ordinary member.

Configuration The following example configures the query interval of ordinary member to 120 seconds on the

Examples interface Ethernet 0.

```
Ruijie(config-if)# ip igmp query-interval 120
```

The following example c configures the query interval of ordinary member to the default value on the interface Ethernet 0.

```
Ruijie(config-if)# no ip igmp query-interval
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.12 ip igmp query-max-response-time

Use this command to configure the maximum response interval.
Use the **no** or **default** form of this command to restore the default setting.
ip igmp query-max-response-time *seconds*
no ip igmp query-max-response-time
default ip igmp query-max-response-time

Parameter Description

Parameter	Description
seconds	The maximum response interval, in the range from 1 to 25 seconds

Defaults The default is 10 seconds.

Command Mode Interface configuration mode

Usage Guide This command controls the interval for the respondent to respond the query message before the device deletes the group information.

Configuration Examples The following example configures the maximum response interval to 20s on the interface Ethernet 0.

```
Ruijie(config-if)# ip igmp query-max-response-time 20
```

The following example configures the maximum response interval to the default value on the interface Ethernet 0.

```
Ruijie(config-if)# no ip igmp query-max-response-time
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.13 ip igmp query-timeout

Use this command to configure the time the device waits before it takes over as the querier.
Use the **no** or **default** form of this command to restore the default setting.
ip igmp query-timeout *seconds*
no ip igmp query-timeout
default ip igmp query-timeout

Parameter Description

Parameter	Description
seconds	Time the device waits before it takes over as the querier, in the range from 60 to 300 in the unit of seconds.

Defaults The default is 255 seconds.

Command Mode Interface configuration mode

Usage Guide IGMPv2 should be run for this command to work. By default, Cisco sets the waiting time of the device to two times of the query interval of **ip igmp query-interval**. In Ruijie, the default value is set to 255s. This device becomes the querier if no query packet is received in this duration.

Configuration Examples The following example configures the time the device waits before it takes over as the querier to 200s on the interface Ethernet 0/1.

```
Ruijie(config-if)# ip igmp query-timeout 200
```

The following example configures the time the device waits before it takes over as the querier to the default value on the interface Ethernet 0/1.

```
Ruijie(config-if)# no ip igmp query-timeout
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.14 ip igmp robustness-variable

Use this command to change the value of the robustness variable.

Use the **no** or **default** form of this command to restore the default setting.

ip igmp robustness-variable *number*

no ip igmp robustness-variable

default ip igmp robustness-variable

Parameter Description

Parameter	Description
number	The value of robustness variable, in the range from 2 to 7

Defaults The default is 2.

Command Mode Interface configuration mode

Usage Guide N/A

Configuration Examples The following example sets the value of robustness variable to 3.

```
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0
Ruijie(config-if)# ip igmp robustness-variable 3
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.15 ip igmp ssm-map enable

Use this command to enable the **igmp ssm-map** function in the global configuration mode.

Use the **no** form of this command to restore the default setting.

ip igmp ssm-map enable

no ip igmp ssm-map enable

default ip igmp ssm-map enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Global configuration mode

Mode

Usage Guide If this command is configured, the dynamically learned group information is added forcibly to the associated source record. This command is usually used together with the **ip igmp ssm-map static** command.

Configuration Examples The following example enables the **igmp ssm-map** function in the global configuration mode.

```
Ruijie(config)#  ip igmp ssm-map enable.
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.16 ip igmp ssm-map static

Use this command to map the static **ssm-map** source IP address to the group records in the global mode.
Use the **no** or **default** form of this command to restore the default setting.
ip igmp ssm-map static *access-list a.b.c.d*
no ip igmp ssm-map static *access-list a.b.c.d*
default ip igmp ssm-map enable

Parameter Description

Parameter	Description
access-list	ACL name in the range 1 to 99, 1300 to 1999 or characters.
a.b.c.d	Unicast address mapped to the group record.

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide This command is used together with the **ip igmp ssm-map enable** command. After configuration, the port maps the corresponding source IP address to all received messages below **v3**.

Configuration Examples The following example maps the source address 192.168.2.2 to all group records permitted by ACL 11.

```
Ruijie(config)#  ip igmp ssm-map static 11 192.168.2.2.
```

Related

Command	Description

Commands

N/A	N/A

Platform Description N/A

3.17 ip igmp static-group

Use this command to directly add an interface to a group.
Use the **no** or **default** form of this command to restore the default setting.
ip igmp static-group *group-address*
no ip igmp static-group *group-address*
default ip igmp static-group *group-address*

Parameter Description

Parameter	Description
group-address	Multicast group IP address

Defaults The switch is not added to a multicast group by default.

Command Mode Interface configuration mode

Usage Guide This command directly adds an interface to a multicast group. The difference from **join-group** is that it directly adds an interface to the group without interacting with a report message.
You can use this command to add an interface to a group.

Configuration Examples The following example adds a host group member manually.

```
Ruijie# configure terminal
Ruijie(config)# interface fast 0/1
Ruijie(config-if)# ip igmp static-group 233.3.3.3
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.18 ip igmp version

Use this command to set the version number of IGMP to be used on the interface.
Use the **no** or **default** form of this command to restore the default setting.

ip igmp version { **1** | **2** | **3** }
no ip igmp version
default ip igmp version

Parameter Description

Parameter	Description
{ **1** | **2** | **3** }	Three version numbers, in the range from 1 to 3

Defaults The default is 2.

Command Mode Interface configuration mode

Usage Guide Use this command to globally configure the IGMP version. It should be noted that IGMP will reset after configuration.

Configuration Examples The following example sets the version number to 2.

```
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0
Ruijie(config-if)# ip igmp version 2
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.19 ip igmp enforce-router-alert

Use this command to receive IGMP report packets with the option of router-alert.
ip igmp enforce-router-alert

Use the **no** form of this command to receive all IGMP report packets.
no ip igmp enfore-router-alert

Use the **default** form of this command to restore the default setting.
default ip igmp enfore-router-alert

Parameter Description

Parameter	Description
N/A	N/A

Defaults All IGMP report packets are received by default.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example receives IGMP report packets with the option of router-**alert.**

```
Ruijie# configure terminal
Ruijie(config)#ip igmp enforce-router-alert
```

Platform Description N/A

3.20 ip igmp enforce-source-subnet

Use this command to receive only the IGMP report packet containing the source address in the same network segment as the port.
ip igmp enforce-source-subnet

Use the **no** form of this command to restore the default setting.
no ip igmp enforce-source-subnet

Use the **default** form of this command to restore the default setting.
default ip igmp enforce-source-subnet

Parameter Description

Parameter	Description
N/A	N/A

Defaults The source IP address is not checked by default.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example receives only the IGMP report packet containing the source address in the same network segment as the port.

```
Ruijie# configure terminal
Ruijie(config)# ip igmp enforce-source-subnet
```

Platform Description N/A

3.21 ip igmp send-router-alert

Use this command to send IGMP report packets with the Router Alert option.

Use the **no** or **default** form of this command to restore the default setting.

ip igmp send-router-alert

no ip igmp send -router-alert

default ip igmp send -router-alert

Parameter Description

Parameter	Description
N/A	N/A

Defaults The Router Alert option is not carried in IGMP packets by default.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example sends IGMP report packets with the Router Alert option.

```
Ruijie# configure terminal
Ruijie(config)# ip igmp send-router-alert
```

Platform Description N/A

3.22 show ip igmp groups

Use this command to display the groups directly connected to the device and the group information learnt from IGMP.

show ip igmp groups [*group-address* | *interface-type*]

interface-number] [**detail**]

Parameter Description

Parameter	Description
group-address	32-bit multicast group IP address, namely Category D address. 8 bits are in one group in decimal form. Groups are separated with dots.
interface-type	Interface type
interface-number	Interface number
detail	Displays the detailed information
N/A	Displays the information about all the groups

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Use this command without any parameters to display group address, interface type, and information about all the multicast groups directly connected to the interface. Information about a specific group is displayed if a group address is added to the command.

Configuration Examples The following example displays information about all the groups.

```
Ruijie# show ip igmp groups
IGMP Connected Group Membership
Group Address   Interface   Uptime  Expires     Last Reporter
224.0.1.1   eth2    00:00:09   00:04:17   10.10.0.82
224.0.1.24      eth2    00:00:06   00:04:14   10.10.0.84
224.0.1.40  eth2    00:00:09   00:04:15   10.10.0.91
224.0.1.60      eth2    00:00:05   00:04:15   10.10.0.7
239.255.255.250 eth2    00:00:12   00:04:15   10.10.0.228
239.255.255.254 eth2    00:00:08   00:04:13   10.10.0.84
```

The following example displays detailed information about a specific group.

```
Ruijie# show ip igmp groups 224.1.1.1 detail
Interface       : eth1
Group: 224.1.1.1
Uptime: 00:00:42
Group mode: Include
Last reporter: 192.168.50.111
TIB-A Count: 2
TIB-B Count: 0
Group source list: (R - Remote, M - SSM Mapping)
Source Address Uptime v3 Exp Fwd Flags
192.168.55.55 00:00:42 00:03:38 Yes R
192.168.55.66 00:00:42 00:03:38 Yes R
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.23 show ip igmp interface

Use this command to display the information of this interface.

show ip igmp interface [*interface-type interface-number*]

Parameter Description

Parameter	Description
interface-type	Interface type.
interface-number	Interface number.
N/A	Displays information about all the interfaces.

Defaults N/A

Command Mode User EXEC mode/ Privileged EXEC mode

Usage Guide Run this command without any parameter, and all interface information is displayed by default.

Configuration Examples The following example displays the information of all the interfaces.

```
Ruijie# show ip igmp interface
Interface vlan1.1 (Index 4294967295)
IGMP Active, Non-Querier, Version 3 (default)
IGMP querying device is 0.0.0.0
IGMP query interval is 125 seconds
IGMP querier timeout is 255 seconds
IGMP max query response time is 10 seconds
```

Last member query response interval is 1000 milliseconds

```
Group Membership interval is 260 seconds|
IGMP Snooping is globally enabled|
IGMP Snooping is enabled on this interface
IGMP Snooping fast-leave is not enabled
IGMP Snooping querier is not enabled
IGMP Snooping report suppression is enabled
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.24 show ip igmp ssm-mapping

Use this command to display the **ssm-map** information of the IGMP configuration.

show ip igmp ssm-mapping [*A.B.C.D*]

Parameter

Parameter	Description

Description

A.B.C.D	Source address to be mapped

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Run this command without any parameter, and all SSM-MAP information is displayed.

Configuration Examples The following example displays the **ssm-map** configuration information.

```
Ruijie# sh ip igmp ssm-mapping
SSM Mapping: Enabled
Database    : Static mappings configured
Show the group information of group 233.3.3.3 to be mapped
Ruijie#show ip igmp ssm-mapping 233.3.3.3
Group address: 233.3.3.3
Database    : Static
Source list  : 192.3.3.3
             : 3.3.3.3
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4 MLD Commands

4.1 clear ipv6 mld group

Use this command to clear the dynamic group member learned by MLD protocol. The dynamic group member refers to the group member record generated by learning the report packets.

clear ipv6 mld group [*group-address*] [*interface-type interface-number*]

Parameter Description

Parameter	Description
group-address	IPv6 multicast group address with 128 bits
interface-type	The associated interface type
interface-number	The associated interface number

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide MLD maintains a list of the multicast groups to be added to the host in the directly-connected sub-net. Use the **clear ipv6 mld group** command to remove all dynamic group member record from the MLD group member list.

Configuration Examples The following example clears all group records.

```
Ruijie# clear ipv6 mld group
```

The following example clears one group record.

```
Ruijie# clear ipv6 mld group ff1e::100
```

The following example s clears the record on a specified interface.

```
Ruijie# clear ipv6 mld group ff1e::100 interfa fa0/1
```

Related Commands

Command	Description
show ipv6 mld groups	N/A
show ipv6 mld interface	N/A

Platform Description N/A

4.2 clear ipv6 mld interface

Use this command to clear all MLD statistical information and the group member records on the interface.

clear ipv6 mld interface *interface-type interface-number*

Parameter Description

Parameter	Description
interface-type	The interface type
interface-number	The interface ID

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Use this command to clear all group information and some packet statistical information learned by LDP on the interface. Those packet statistical information include the number of the received report packets, the number of the done packets and the the number of the group members on the interface.

Configuration Examples The following example clears all MLD statistical information and the group member records on the interface.

```
Ruijie# clear ipv6 mld interface fa 1/1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.3 ipv6 mld access-group

Use this command to filter the specific requested group on the interface. Only the report packets in accordance with the corresponding ACL are allowed to be processed.
Use the **no** or **default** form of this command to restore the default setting.
ipv6 mld access-group *access-list*
no ipv6 mld access-group
default ipv6 mld access-group

Parameter Description

Parameter	Description
access-list	The IPv6 ACL name

Defaults This function is disabled by default.

Command Interface configuration mode

Mode

Usage Guide Use this command to filter some groups on the interface and associate with the corresponding ACLs. The correspondent ACL deny report packets will be discarded. This command supports the extended ACL and the source record information of the MLDv2 packets can be filtered.

The multicast group access control command is associated with the extended ACL. When the received MLD report mesage is (S1,S2,S3…Sn,G), use this command to match and check the (0,G) message using the corresponding ACL. To this end, a (0,G) must be configured for the extended ACL to filter the (S1,S2,S3…Sn,G).

Configuration Examples The following example enables the group information carried in the report packets to be in accordance with acl for the normal handling on the interface Eth0/1.

```
Ruijie(config)#ipv6 access-list acl
Ruijie(config-ipv6-acl)#permit ipv6 ::/64 ff66::100/64
Ruijie(config-ipv6-acl)#permit ipv6 2222::3333/64 ff66::100/64
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if)# ipv6 mld access-group acl
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.4 ipv6 mld immediate-leave group-list

Use this command to set the immediate-leave mechanism. With this command configured, the group within the range of group-list, will not send the query packet for the specific group and will remove this group from the group member list immediately after receiving the corresponding done packets. This function is used in the condition that there is only one multicast source that receives the host request on an interface. Use the **no** or **default** form of this command to restore the default setting.

ipv6 mld immediate-leave group-list *access-list*

no ipv6 mld immediate-leave group-list

default ipv6 mld immediate-leave group-list

Parameter Description

Parameter	Description
access-list	The IPv6 ACL name

Defaults This function is disabled by default.

Command Interface configuration mode

Mode

Usage Guide Without this command configured, when the device receives the MLD leave packets, the request packets for the specific groups will be sent. If there is still no host reply within the response time, the device will remove the corresponding group record from the group member list. The timeout interval is determined by the last member query interval and the MLD robustness variable, and the default value is 2s.
With this command configured, when the device receives the MLD leave packets, it will not send the request packets for the specific groups, but remove the group information immediately, which reduces the leave delay greatly in the condion that there is only one host connecting to the interface.

Configuration Examples The following example configures the immediate-leave function.

```
Ruijie# configure terminal
Ruijie(config)#ipv6 access-list acl
Ruijie(config-ipv6-acl)#permit ipv6 2222::3333/64 ff66::100/64
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if)# ipv6 mld immediate-leave group-list acl
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.5 ipv6 mld join-group

Use this command to configure the host action for the switch interface and add the related multicast group to the interface.
Use the **no** or default form of this command to restore the default setting.
ipv6 mld join-group *group-address*
no ipv6 mld join-group *group-address*
default ipv6 mld join-group group-address

Parameter Description

Parameter	Description
group-address	The IPv6 non-management multicast group address

Defaults The interface is not added to any group by default.

Command Mode Interface configuration mode

Usage Guide Use this command to enable the MLD host action on the interface. The interface can not only send

the packets initiatively, but also reply to the query packets.
Use this command if it is necessary to join a group member to the interface.
It is worth mentioning that if the group address whose beginning characters are 0xFF*1,0xFF3*, it fails to configure this command. The group address whose beginnning characters are 0xFF*2 fails to form a group.

Configuration Examples The following example adds the host group member:

```
Ruijie# configure terminal
Ruijie(config)# interface fast 0/1
Ruijie(config-if)# ipv6 mld join-group ff55::100
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.6 ipv6 mld last-member-query-count

last-member-query-count represents that after the interface with MLD enabled receives the done packets, the count number of the times of sending the query packets to the specific group. Use this command to set the last-member-query-count number.
Use the **no** or **default** form of this command to restore the default setting.
ipv6 mld last-member-query-count *number*
no ipv6 mld last-member-query-count
default ipv6 mld last-member-query-count

Parameter Description

Parameter	Description
number	The last member query count number. The valid range is 2-7.

Defaults The default is 2.

Command Mode Interface configuration mode

Usage Guide With the MLD leave packets received on the interface, if there is no group reply within the timeout interval, this group will be removed from the MLD group member list on the interface. The timeout interval is the query interval for the specific group(multiplied by the value of **mld last-member-query-count**) plus half the reply time.

Configuration Examples The following example sets the last-member-query-count number to 3.

```
Ruijie# configure terminal
```

```
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if)# ipv6 mld last-member-query-count 3
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.7 ipv6 mld last-member-query-interval

Use this command to set the time interval of sending the query packets to the specific group. Use the **no** or **default** form of this command to restore the default setting.

ipv6 mld last-member-query-interval *interval*

no ipv6 mld ast-member-query-interval

default ipv6 mld last-member-query-interval

Parameter Description

Parameter	Description
interval	The valid range is 1-255 in the unit of 0.1 seconds.

Defaults The default is 10 seconds.

Command Mode Interface configuration mode

Usage Guide With the MLD leave packets received on the interface, if there is no group reply within the timeout interval, this group will be removed from the MLD group member list on the interface. The timeout interval is the query interval for the specific group(multiplied by the value of **mld last-member-query-count**) plus half the reply time.

Configuration Examples The following example sets the mld last-member-query-interval to 2 seconds.

```
Ruijie# configure terminal
Ruijie(config)# interface fa 0/1
Ruijie(config-if)# ipv6 mld last-member-query-interval 20
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.8 ipv6 mld limit

Use this command to enable to learn the max-number of the group member through the MLD protocol.
Use the **no** form of this command to restore the default setting.
ipv6 mld limit *number* [**except** *access-list*]
no ipv6 mld limit *number* [**except** *access-list*]
default ipv6 mld limit ***number*** [**except** *access-list*]

Parameter Description

Parameter	Description
number	The maximum number of the group member learned by the MLD
except access-list	(Optional) The ACL beyond the configured mld limit

Defaults The default is 1024.

Command Mode Interface configuration mode/Global configuration mode

Usage Guide Use this command to set the max-number of the group members learned through the MLD in the global configuration mode. If the group member number has exceeded the limit, the received report packets later will be discarded and fail to form the group record.
If the except list has also been set at the same time, the group member packets, including the packets in the access-list, will be free from the member number limit.
This command can also be used in the interface configuration mode. The configurations in two different configuration modes are independent. If the number limit in the global configuration mode is lower than the one in the interface configuration mode, the former configuration takes precedence.

Configuration Examples The following example sets the MLD limit to 300.

```
Ruijie(config-if)# ipv6 mld limit 300
```

The following example sets the MLD limit to 300, but the configured acl can still learn.

```
Ruijie(config-if)# ipv6 mld limit 300 except acl
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.9 ipv6 mld mroute-proxy

Use this command to enable the interface to forward the packets to the correspondent connected interface.
Use the **no** or **default** form of this command to restore the default setting.
ipv6 mld mroute-proxy *interface-type interface-number*
no ipv6 mld mroute-proxy
default ipv6 mld mroute-proxy

Parameter Description

Parameter	Description
interface-type interface-number	The correspondent connected interface

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide After the connected interface has been configured as the proxy-service interface, it can forward the MLD packets sent from other members

Configuration Examples The following example sets the interface as the mroute-proxy interface.

```
Ruijie(config-if)# ipv6 mld mroute-proxy fa 0/1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.10 ipv6 mld proxy-service

Use this command to enable the proxy-service function for the interface connected with the mroute-proxy interface in the downward direction. After configuring this command, the interface becomes the one connected with the mroute-proxy in the upward direction, and associates with and maintains the group information from the interfaces in the downward direction. Use the **no** or **default** form of this command to disable the default setting.
ipv6 mld proxy-service
no ipv6 mld proxy-service
default ipv6 mld proxy-service

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Interface configuration mode

Usage Guide The configurable max-number limit is 32. The number of the interfaces with MLD Proxy enabled is limited by the number multicast interfaces supported device. After receiving the query packet, the proxy-service interface replies according to the member information, which are collected from the mroute-proxy interface and maintained by the proxy-service interface itself. With proxy-service configured, this interface owns the host action rather than the router action.
The **ipv6 mld mroute-proxy interface** command configuration on the associated interface in the downward direction is removed automatically if the switchport operation is performed on the interfaces.

Configuration Examples The following example sets the interface proxy-service.

```
Ruijie(config-if)# ipv6 mld proxy-service
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.11 ipv6 mld querier-timeout

Use this command to set the querier alive period. Use the **no** or **default** form of this command to restore the default setting.
ipv6 mld querier-timeout *seconds*
no ipv6 mld querier-timeout
default ipv6 mld querier-timeout

Parameter Description

Parameter	Description
seconds	The querier alive period, in the range from 60 to 300 in the unit of seconds.

Defaults The default is 255 seconds.

Command Mode Interface configuration mode

Usage Guide After the querier sends the query packet, the querier will wait to receive the query packet sent by another querier within the alive period. If no packet is received by the first querier within the alive period, then the first querier takes itself as the only querier on the network segment.

Configuration Examples The following example sets the querier alive period to 200 seconds.

```
Ruijie(config-if-Ethernet 0/1)# ipv6 mld querier-timeout 200
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.12 ipv6 mld query-interval

Use this command to set the query interval for the general member. Use the **no** or **default** form of this command to restore the default setting.

ipv6 mld query-interval *seconds*

no ipv6 mld query-interval

default ipv6 mld query-interval

Parameter Description

Parameter	Description
seconds	The query interval for the general member, in the range from 1 to 18000 in the unit of seconds.

Defaults The default is 125 seconds.

Command Mode Interface configuration mode

Usage Guide The interval of the timer for sending the general query packets can be changed by configuring the query-interval for the general member.

Configuration Examples The following example sets the query-interval for the general member on the interface Ethernet 0.

```
Ruijie(config-if)# ipv6 mld query-interval 120
```

The following example sets the query-interval for the general member to the default value on the interface Ethernet 0.

```
Ruijie(config-if)# no ipv6 mld query-interval
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.13 ipv6 mld query-max-response-time

Use this command to set the maximum response time.

Use the **no** or **default** form of this command to restore the default setting.

ipv6 mld query-max-response-time *seconds*

no ipv6 mld query-max-response-time

default ipv6 mld query-max-response-time

Parameter Description

Parameter	Description
seconds	The maximum response time, in the range from 1 to 25 in the unit of seconds

Defaults The default is 10 seconds.

Command Mode Interface configuration mode

Usage Guide Use this command to control the maximum response time of the host after the device sends the query packets. If there is no response within the maximum response time, MLD will remove the corresponding group from the group member list.

Configuration Examples The following example sets the maximum query response time on the interface gigabitEthernet 0/1.

```
Ruijie(config-if)# ipv6 mld query-max-response-time 20
```

The following example sets the maximum query response time on the interface gigabitEthernet 0/1.

```
Ruijie(config-if)# no ipv6 mld query-max-response-time
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.14 ipv6 mld robustness-variable

Use this command to set querier robustness value. Use the **no** or **default** form of this command to restore the default setting.

ipv6 mld robustness-variable *number*

no ipv6 mld robustness-variable

default ipv6 mld robustness-variable

Parameter Description

Parameter	Description
number	Sets the querier robustness value, in the range from 2 to 7.

Defaults The default is 2.

Command Mode Interface configuration mode

Usage Guide N/A

Configuration Examples The following example sets the querier robustness value to 3.

```
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0
Ruijie(config-if)# ipv6 mld robustness-variable 3
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.15 ipv6 mld ssm-map enable

Use this command to enable the mld ssm-map function.

Use the **no** or **default** form of this command to restore the default setting.

ipv6 mld ssm-map enable

no ipv6 mld ssm-map enable

default ipv6 mld ssm-map enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide With this command configured, the group information dynamically learned will be added to the related source record forcibly. Usually, this command is set with the **ipv6 mld ssm-map static** command.

Configuration Examples The following example enables the mld ssm-map function in the global configuration mode.

```
Ruijie(config)# ipv6 mld ssm-map enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.16 ipv6 mld ssm-map static

Use this command to set the mld ssm-map static mapping source record in the global configuration mode.
Use the **no** or **default** form of this command to restore the default setting.
ipv6 mld ssm-map static *access-list X:X:X:X::X*
no ipv6 mld ssm-map static *access-list X:X:X:X::X*
default ipv6 mld ssm-map static *access-list source-address*

Parameter Description

Parameter	Description
access-list	Sets the IPv6 ACL name.
X:X:X:X::X	Sets the unicast address for the group record mapping.

Defaults There is no mapping source address by default.

Command Mode Global configuration mode

Usage Guide This command is used with the **ipv6 mld ssm-map enable** command. With this command configured, the received mldv1 packets are mapped to the correspondent source record.

Configuration Examples The following example maps all group record of the ACL name to the source address 4444::1234.

```
Ruijie(config)# ipv6 mld ssm-map static te 4444::1234
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.17 ipv6 mld static-group

Use this command to add an interface to a group statically. Use the **no** or **default** form of this command to restore the default setting.
ipv6 mld static-group *group-address*
no ipv6 mld static-group *group-address*
default ipv6 mld static-group *group-address*

Parameter Description

Parameter	Description
group-address	Sets the IPv6 non-management multicast group address.

Defaults The interface is not added to any group statically.

Command Mode Interface configuration mode

Usage Guide Use this command to add a multicast group to the interface directly. The difference from the join-group is that the packet interaction is not necessary.
Use this command when it is necessary to add a group member to the interface. It is worth mentioning that only the **no ipv6 mld static-group** command can be used to delete the group, but not the **clear** command.

Configuration Examples The following example adds interface Eth0/1 to group ff55::3 statically.

```
Ruijie# configure terminal
Ruijie(config)# interface fast 0/1
Ruijie(config-if)# ipv6 mld static-group ff55::3
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.18 ipv6 mld version

Use this command to set the MLD version number on the interface. Use the **no** or **default** form of this command to restore the default setting.

ipv6 mld version { **1** | **2** }

no ipv6 mld version

default ipv6 mld version

Parameter Description

Parameter	Description
{ 1 | 2 }	Sets the MLD version number.

Defaults The default is 2.

Command Mode Interface configuration mode

Usage Guide Use this command to control the MLD version number.

Configuration Examples The following example sets the MLD version 1.

```
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if)# ipv6 mld version 1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.19 show ipv6 mld groups

Use this command to display the group connected with the switch and the group information learned from the MLD.

show ipv6 mld groups [*group-address* | *interface-type interface-number*] [**detail**]

Parameter Description

Parameter	Description
group-address	Sets the IPv6 multicast group address in 128 bits.
interface-type	Sets the interface type.
interface-number	Sets the interface number.

detail	Displays the information in detail.
	Displays all the group information.

Defaults N/A

Command Mode Privileged EXEC mode /Interface configuration mode

Usage Guide Use this command without the parameters to display the information including the group address, the interface type and the multicast group information. Use this command with a parameter to display the information on a specific group.

Configuration Examples The following example displays all group information.

```
Ruijie# show ipv6 mld groups
MLD Connected Group Membership
Group Address  Interface Uptime Expires  Last Reporter
ff66::1 VLAN1 00:10:57 00:02:16 fe80::2d0:f8ff:fe22:3378
```

The following example displays the detailed information.

```
Ruijie# show ipv6 mld groups detail
Interface:     VLAN 1
Group:         ff66::1
Uptime:        00:10:26
Group mode:    Exclude (Expires: 00:02:47)
Last reporter:  fe80::2d0:f8ff:fe22:3378
Source list is empty
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.20 show ipv6 mld interface

Use this command to display the configurations on the interface.

show ipv6 mld interface [*interface-type interface-number*]

Parameter Description

Parameter	Description
interface-type	Sets the interface type.
interface-number	Sets the interface number.

Defaults N/A

Command Mode User EXEC mode / Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the state information of all interfaces.

```
Ruijie# show ipv6 mld interface
Interface VLAN 2 (Index 4098)
 MLD Enabled, Inactive, Version 2 (default)
 MLD interface limit is 1024
 MLD interface has 0 group-record states
 MLD interface has 1 join-group records
 MLD interface has 0 static-group records
 MLD activity: 0 joins, 0 leaves
 MLD query interval is 125 seconds
 MLD querier timeout is 255 seconds
 MLD max query response time is 10 seconds
 Last member query response interval is 10 (1/10s)
 Last member query count is 2
 Group Membership interval is 260
 Robustness Variable is 2
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.21 show ipv6 mld ssm-mapping

Use this command to display the mapping information of the source address for the group record.

show ipv6 mld ssm-mapping [*group-address*]

Parameter Description

Parameter	Description
group-address	Displays the group address.

Defaults N/A

Command Mode User EXEC mode / Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the state information of all interfaces.

```
Ruijie# show ipv6 mld interface
Interface VLAN 2 (Index 4098)
 MLD Enabled, Inactive, Version 2 (default)
 MLD interface limit is 1024
 MLD interface has 0 group-record states
 MLD interface has 1 join-group records
 MLD interface has 0 static-group records
 MLD activity: 0 joins, 0 leaves
 MLD query interval is 125 seconds
 MLD querier timeout is 255 seconds
 MLD max query response time is 10 seconds
 Last member query response interval is 10 (1/10s)
 Last member query count is 2
 Group Membership interval is 260
 Robustness Variable is 2
```

Related Commands

Command	Description
N/A	N/A

5 PIM-DM Commands

5.1 clear ip pim dense-mode track

Use this command to clear the statistics of PIM-DM packets.

clear ip pim dense-mode track

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to reconfigure the start time of the statistics and clear the PIM packet counter.

Configuration Examples The following example clears the statistics of PIM-DM packets.

```
Ruijie# clear ip pim dense-mode track
```

Related Commands

Command	Description
show ip pim dense-mode track	Displays the statistics of the PIM packets.

Platform Description N/A

5.2 ip pim dense-mode

Use this command to enable PIM-DM on the interface.

Use the **no** or **default** form of this command to restore the default setting.

ip pim dense-mode

no ip pim dense-mode

default ip pim dense-mode

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide

- Before enabling the PIM-DM, enable the multicast forwarding function in the global configuration mode. Otherwise, the multicast data packet cannot be forwarded even the PIM-DM is enabled.
- Once the PIM-DM is enabled, the IGMP is enabled automatically on the interface without manual configuration.
- During the execution of this command, if the prompt "Failed to enable PIM-DM on <Interface Name>, resource temporarily unavailable, please try again" appears, re-execute this command.
- During the execution of this command, if the prompt "PIM-DM Configure failed! VIF limit exceeded in NSM!!!" appears, it indicates the allowed configured multicast interface number exceeds the upper limit of the multicast interfaces. In this case, if it's still necessary to enable the PIM-DM on the interface, delete the unnecessary PIM-DM, PIM-SM or DVMRP interfaces.
- It is not recommended to configure different multicast routing protocols on different interfaces of a device.

Configuration Examples The following example enables PIM-DM on the interface.

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim dense-mode
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.3 ip pim neighbor-filter

Use this command to enable the neighbor filtering on the interface. If the neighbor filtering is set, PIM-DM will not establish the peering relationship with this neighbor or will terminate the established peering relationship with this neighbor once the neighbor is denied by the filtering access list.
Use the **no** or **default** form of this command is to restore the default setting.

ip pim neighbor-filter *access-list*
no ip pim neighbor-filter *access-list*
default ip pim neighbor-filter *access-list*

Parameter Description

Parameter	Description

access-list	Access control list supporting numerical ACL in the range from 1 to 99 and name ACL

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide N/A

Configuration Examples The following example enables the neighbor filtering on the interface.

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim neighbor-filter 14
```

1. When the associated ACL rule is permit, only the neighbor address in ACL can be used as the PIM neighbor of the current interface. When the associated ACL rule is deny, the neighbor address in ACL cannot be used as the PIM neighbor of the current interface.
2. Peering relationship refers to the interaction of protocol packets between the PIM neighbors. If the peering relationship with a PIM device is terminated, the neighbor relationship with this device will not be established, and the PIM protocol packets from this device will not be received.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.4 ip pim override-interval

Use this command to reconfigure the override-interval of the hello message.
Use the **no** or **default** form of this command to restore the default setting.
ip pim override-interval *interval-milliseconds*
no ip pim override-interval
default ip pim override-interval

Parameter Description

Parameter	Description
interval-milliseconds	In the range from 1 to 65,535 in the unit of milliseconds

Defaults The default is 2,500 milliseconds.

Command Mode Interface configuration mode

Usage Guide Configuring the override-interval is to set the pruning veto time for the interface.

Configuration Examples The following example sets the override-interval to 300 milliseconds.

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim override-interval 3000
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.5 ip pim propagation-delay

Use this command to reconfigure the propagation-interval of the hello message.
Use the **no** or **default** form of this command to restore the default setting.
ip pim propagation-delay *interval-milliseconds*
no ip pim propagation-delay
default ip pim propagation-delay

Parameter Description

Parameter	Description
interval-milliseconds	Propagation-interval of the hello message in the range from 1 to 32,767 in the unit of milliseconds

Defaults The default is 500 milliseconds.

Command Mode Interface configuration mode

Usage Guide Configuring the propagation-delay is to set the transmission delay time for the interface.

Configuration Examples The following example sets the propagation-delay to 600 milliseconds.

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim propagation-delay 600
```

Related

Command	Description

Commands

N/A	N/A

Platform Description N/A

5.6 ip pim query-interval

Use this command to reconfigure the interval of sending the hello message.
Use the **no** or **default** form of this command to restore the default setting.
ip pim query-interval *interval-seconds*
no ip pim query-interval
default ip pim query-interval

Parameter Description

Parameter	Description
Interval-seconds	Interval of sending the hello message in the range from 1 to 65,535 in the unit of seconds

Defaults The default is 30 milliseconds.

Command Mode Interface configuration mode

Usage Guide If hello interval is set, the hello holdtime value will be updated to 3.5 times of hello interval.

Configuration Examples The following example sets the interval of sending the hello message to 123 seconds.

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim query-interval 123
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.7 ip pim state-refresh disable

Use this command to prohibit the interface from processing and forwarding the PIM-DM state refresh messages.
Use the **no** or **default** form of this command to restore the default setting.

ip pim state-refresh disable
no ip pim state-refresh disable
default ip pim state-refresh disable

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, the PIM-DM state refresh messages can be processed and forwarded.

Command Mode Global configuration mode

Usage Guide When the state refresh function is disabled, the PIM-DM state refresh message is not processed and forwarded. The sent Hello message does not contain the status refresh option. Consequently, the SR Cap field will not be processed when the Hello message is received.

Configuration Examples The following example disables the processing of the PIM-DM state refresh message.

```
Ruijie# configure terminal
Ruijie(config)# ip pim state-refresh disable
```

Generally, it is not recommended to disable the status refresh function because disabling this function may converge the PIM-DM multicast forwarding tree again that has been converged, resulting in unnecessary waste of bandwidth and oscillation of multicast routing table.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.8 ip pim state-refresh origination-interval

Use this command to set the interval of sending the PIM-DM state refresh message. The interval is the seconds elapsed between two state refresh messages.
Use the **no** or **default** form of this command to restore the default setting.
ip pim state-refresh origination-interval *interval-seconds*
no ip pim state-refresh origination-interval
default ip pim state-refresh origination-interval

Parameter Description

Parameter	Description
Interval-seconds	Interval of sending the PIM-DM update message in the range from 1

	to 100 in unit of seconds

Defaults The default is 60 seconds.

Command Mode Interface configuration mode

Usage Guide N/A

Configuration Examples The following example sets the interval of sending the PIM-DM state refresh message to 65 seconds.

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim state-refresh
origination-interval 65
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.9 ip pim mib dense-mode

Use this command to switch the device from the PIM MIB sparse mode to the PIM MIB dense mode. Use the **no** form or **default** form of this command to switch back to the PIM MIB sparse mode.

ip pim mib dense-mode

no ip pim mib dense-mode

default ip pim mib dense-mode

Parameter Description

Parameter	Description
N/A	N/A

Defaults The device is in the PIM MIB sparse mode by default.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example switches the device from the PIM MIB sparse mode to the PIM MIB dense mode.

```
Ruijie# configure terminal
```

```
Ruijie(config)# ip pim mib dense-mode
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.10 show ip pim dense-mode interface

Use this command to display the information about the PIM-DM interface.

show ip pim dense-mode interface [*interface-type interface-number*] [**detail**]

Parameter Description

Parameter	Description
interface-type interface-number	Interface type and interface ID
detail	Displays details of the interface.

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide N/A

Configuration Examples The following example displays the information about the PIM-DM interface.

```
Ruijie# show ip pim dense-mode interface
Address   Interface  VIFIndex  Ver/Mode   Nbr
Mode Count
10.10.10.10 FastEthernet 0/45 3   v2/D        1
50.50.50.50 VLAN4         2      v2/D         1
```

Field	Description
Address	Primary IP address of the PIM-DM interface
Interface	Name of the PIM-DM interface
VIF Index	VIF ID (ID)
Ver/Mode	PIM version/mode
Nbr Count	Number of neighbors of the PIM-DM interface.

Related Commands

Command	Description

show ip pim dense-mode neighbor	Displays the information about the neighbors of the PIM-DM interface.

Platform Description N/A

5.11 show ip pim dense-mode mroute

Use this command to display the information about the PIM-DM routing table.

show ip pim dense-mode mroute [*group-or-source-address* [*group-or-source-address*]] [**summary**]

Parameter Description

Parameter	Description
group-or-source-address	Group address or source address
group-or-source-address	Group address or source address. Two addresses cannot both be the group addresses or the source addresses.
summary	Displays the brief information of routing entries.

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide N/A

Configuration Examples The following example displays the information about the PIM-Dm routing table.

```
Ruijie# show ip pim dense-mode mroute
PIM-DM Multicast Routing Table
(1.1.1.111, 229.1.1.1)
  MRT lifetime expires in 205 seconds
  RPF Neighbor: 50.50.50.1, Nexthop:50.50.50.1,VLAN 4
  Upstream IF: VLAN 4
    Upstream State: Pruned, PLT:200
    Assert State: NoInfo
  Downstream IF List:
    FastEthernet 0/45:
      Downstream State: NoInfo
      Assert State: Loser, AT:170
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.12 show ip pim dense-mode neighbor

Use this command to display the information about the PIM-DM neighbors.

show ip pim dense-mode neighbor [*interface-type interface-number*]

Parameter Description

Parameter	Description
interface-type interface-number	Interface type and interface ID

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide N/A

Configuration Examples The following example displays the information about the PIM-DM neighbors.

```
Ruijie# show ip pim dense-mode neighbor
Neighbor-Address Interface     Uptime/Expires    Ver
10.10.10.1    FastEthernet 0/45 00:19:29/00:01:21  v2
50.50.50.1    VLAN 4            00:22:09/00:01:39  v2
```

Description of fields in the results:

Field	Description
Neighbor-Address	IP address of the neighbor
Interface	Name of the interface connecting the neighbor
Uptime/Expires	Valid time and aging time of the entry
Ver	PIM version

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.13 show ip pim dense-mode nexthop

Use this command to display the information about the PIM-DM next hop.

show ip pim dense-mode nexthop

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide N/A

Configuration Examples The following example displays the information about the PIM-Dm next hop:

```
Ruijie# show ip pim dense-mode nexthop
Destination  Nexthop   Nexthop   Nexthop   Metric Pref
               Num       Addr      Interface
1.1.1.111     1       50.50.50.1  VLAN 4     0     1
```

Field	Description
Destination	Multicast source IP address
Nexthop Num	Number of next hop
Nexthop Addr	IP address of next hop
Nexthop interface	Interface connecting to the of next hop
Metric	Route metric
Pref	Route priority

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.14 show ip pim dense-mode track

Use this command to display the statistics of the PIM-DM packets.

show ip pim dense-mode track

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide This command is used to display the number of sent and received PIM packets during the period from the beginning of the statistics till now. When the system starts up, it sets the start time of the statistics. The start time of the statistics is reconfigured and the PIM packet counter is cleared on calling the clear ip pim dense-mode track every time.

Configuration Examples The following example displays the statistics of the PIM-DM packets.

```
Ruijie# show ip pim dense-mode track
              PIM packet counters
Elapsed time since counters cleared: 00:04:03
                       received    sent
Valid PIMDM packets:        1           8
Hello:                      1           8
Join/Prune:              0          0
Graft:                      0            0
Graft-Ack:                  0            0
Assert:                  0            0
State-Refresh:           0           0
PIM-SM-Register:         0           0
PIM-SM-Register-Stop:     0          0
PIM-SM-BSM:                 0              0
PIM-SM-C-RP-ADV:            0            0
Unknown Type:               0
Errors:
Malformed packets:       0
Bad checksums:           0
Unknown PIM version:        0
Send errors:                    0
```

Related Commands

Command	Description
clear ip pim dense-mode track	Clears the statistics of the PIM packets.

Platform Description N/A

6 PIM-SM Commands

6.1 clear ip pim sparse-mode bsr rp-set

Use this command to clear all the RP information learnt dynamically.

clear ip pim sparse-mode bsr rp-set *

Parameter Description

Parameter	Description
*	Clears all RP-SET.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide All the RP information learnt dynamically can be cleared manually.

Configuration Examples The following example clears all the RP information learnt dynamically.

```
Ruijie# clear ip pim sparse-mode bsr rp-set *
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.2 clear ip pim sparse-mode track

Use this command to reconfigure the start time of the statistics and clear the PIMv6 packet counter.

clear ip pim sparse-mode track

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to reconfigure the start time of the statistics and clear the PIM packet counter.

Configuration Examples The following example clears the PIM packet counter.

```
Ruijie# clear ip pim sparse-mode track
```

Related Commands

Command	Description
show ip pim sparse-mode track	Displays the PIM packet statistics.

Platform Description N/A

6.3 ip pim accept-bsr list

Use this command to confine the BSR address range.

Use the **no** or **default** form this command to restore the default setting.

ip pim accept-bsr list *access-list*

no ip pim accept-bsr

default ip pim accept-bsr

Parameter Description

Parameter	Description
list *access-list*	IP standard number ACL

Defaults By default, the PIMSM router receives all external BSM packets.

Command Mode Global configuration mode

Usage Guide Use this command to limit the range of the legal BSR.

Configuration Examples The following example confines the BSR address range.

```
Ruijie# configure terminal
Ruijie(config)# ip pim accept-bsr list 1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.4 ip pim accept-crp list

Use this command to confine the C-RP address range and the multicast group address range it serves.

Use the **no** or **default** form of this command to restore the default setting,

ip pim accept-crp list *access-list*

no ip pim accept-crp

default ip pim accept-crp

Parameter Description

Parameter	Description
list *access-list*	IP extension number ACL

Defaults By default, the elected BSR receives all external advertisements of candidate RPs.

Command Mode Global configuration mode

Usage Guide With this command configured on the candidate BSR, when this BSR becomes the elected BSR, it is able to limit the address range of the legal C-RP and the multicast group range it serves.

Configuration Examples The following example confines the C-RP address range and the multicast group address range it serves.

```
Ruijie (config)# comfigure terminal
Ruijie (config)# ip pim accept-crp list 100
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.5 ip pim accept-crp-with-null-group

Use this command to receive the C-RP-ADV packets whose prefix-count is 0.

Use the **no** or **default** form of this command to restore the default setting.

ip pim accept-crp-with-null-group

no ip pim accept-crp-with-null-group

default ip pim accept-crp-with-null-group

Parameter

Parameter	Description

Description

N/A	N/A

Defaults By default, the BSR does not receive the C-RP-ADV packets whose prefix-count is 0.

Command Mode Global configuration mode

Usage Guide With this command configured on the candidate BSR, when this BSR becomes the elected BSR, it is able to receive the C-RP-ADV packets whose prefix-count is 0, and considers this C-RP supports all groups.

Configuration Examples The following example receives the C-RP-ADV packets whose prefix-count is 0.

```
Ruijie (config)# configure terminal
Ruijie (config)# ip pim accept-crp-with-null-group
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.6 ip pim accept-register list

Use this command to confine the address range of the (S,G) entry of the register packets.
Use the **no** or **default** form of this command to restore the default setting.
ip pim accept-register { **list** *access-list* [**route-map** *map-name*] | **route-map** *map-name* [**list** *access-list*] }
no ip pim accept-register
default ip pim accept-register

Parameter Description

Parameter	Description
list *access-list*	Uses an extended IP access list to define the (S, G) address range. Access control list supporting numerical ACL in the range of 100 to 199 and 2000 to 2699 and name ACL.
route-map *map-name*	Uses a route map to define the (S, G) address range.

Defaults The (S, G) address range is not confined by default.

Command Mode Global configuration mode

Usage Guide This command is used to confine the source IP address of register messages on RP.

Configuration Examples The following example confines the source address of register packets on the RP.

```
Ruijie (config)# ip pim accept-register list 100
Ruijie (config)# access-list 100 permit ip 192.168.195.0 0.0.0.255 225.1.1.1 0.0.0.255
```

Related Commands

Command	Description
access-list	N/A

Platform Description N/A

6.7 ip pim bsr-border

Use this command to configure the BSR border.

Use the **no** or **default** form of this command to restore the default setting.

ip pim bsr-border

no ip pim bsr-border

default ip pim bsr-border

Parameter Description

Parameter	Description
N/A	N/A

Defaults No BSR border is configured by default.

Command Mode Interface configuration mode

Usage Guide To restrain BSM flooding, configure BSR border on the interface so that the interface drops BSM packets upon receiving them and the BSM packets are not forwarded from this interface.

Configuration Examples The following example sets the BSR border on the interface *g 0/3*

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim bsr-border
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.8 ip pim bsr-candidate

Use this command to configure the C-BSR.

Use the **no** or **default** form of this command to restore the default setting.

ip pim bsr-candidate *interface-type interface-number* [*hash-mask-length* [*priority-value*]]

no ip pim bsr-candidate

default ip pim bsr-candidate

Parameter Description

Parameter	Description
interface-type interface-number	Interface type and number
hash-mask-length	(Optional) HASK mask length configured for electing the RP in the range from 0 to 32, The default is 10.
priority-value	(Optional) Priority configured for the candidate BSR in the range from 0 to 255. The default is 64.

Defaults No C-BSR is configured by default.

Command Mode Global configuration mode

Usage Guide A PIM-SM domain must contain a unique BootStrap Router (BSR). BSR is responsible for collect and issue RP information. A unique recognized BSR is elected among multiple candidate BSRs through the bootstrap packet. Before BSR information is available, C-BSRs consider them to be the BSR, and regularly send bootstrap packets using the multicast address 224.0.0.13 in the PIM-SM domain. This packet contains the address and priority of the BSR.

This command allows the device to send a bootstrap message to all the PIM neighbors using the assigned BSR address. Each neighbor compares the original BSR address with the address in the received bootstrap message. If the IP address of the received address is equal to or larger than the original address, each neighbor saves this received address as the BSR address. Otherwise, they will discard this message.

The current device considers itself to be BSR until it receives a bootstrap message from another candidate BSR and is notified that it has a higher priority value (or the same priority value, but with a larger IP address).

Configuration Examples The following example configures the C-BSR.

```
Ruijie# configure terminal
Ruijie(config)# ip pim bsr-candidate g 0/3 30 192
```

Related Commands

Command	Description
access-list	N/A

Platform Description N/A

6.9 ip pim dr-priority

Use this command to set the DR priority.

Use the **no** or **default** form of this command to restore the default setting.

ip pim dr-priority *priority-value*

no ip pim dr-priority

default ip pim dr-priority

Parameter Description

Parameter	Description
priority-value	The larger the value, the higher the priority is. The range is from 0 to 4,294,967,294.

Defaults The default is 1.

Command Mode Interface configuration mode

Usage Guide To select a DR:

If the priority parameter of the Hello message is set for the devices in a LAN, the one of the highest priority is elected to be the DR. If several devices have the same priority, the one of the largest IP address is elected to be the DR.

If the priority parameter of the Hello message is not set for the devices in a LAN, the one of the largest IP address is elected to be the DR.

Configuration Examples The following example sets the DR priority.

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim dr-priority 10000
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.10 ip pim ignore-rp-set-priority

Use this command to ignore the RP priority.

Use the **no** or **default** form of this command to restore the default setting.

ip pim ignore-rp-set-priority

no ip pim ignore-rp-set-priority

default ip pim ignore-rp-set-priority

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, the C-RP with higher priority is selected.

Command Mode Global configuration mode

Usage Guide This command is used to ignore the priority of the RP.

Configuration Examples The following example ignores the RP priority.

```
Ruijie(config)# ip pim ignore-rp-set-priority
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.11 ip pim jp-timer

Use this command to set the interval to send the join/prune message.

Use the **no** or **default** form of this command to restore the default setting.

ip pim jp-timer *seconds*

no ip pim jp-timer

default ip pim jp-timer

Parameter Description

Parameter	Description
seconds	Interval to send the join/prune message in the range from 1 to 65535 in the unit of seconds

Defaults The default is 60 seconds.

Command Mode Global configuration mode

Usage Guide This command is used to set the interval to send the Join/Prune message.

Configuration Examples The following example sets the interval to send the Join/Prune message to 50 seconds.

```
Ruijie# configure terminal
Ruijie(config)# ip pim jp-timer 50
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.12 ip pim neighbor-filter

Use this command to confine the neighbor address range.
Use the **no** or **default** form of this command to restore the default setting.
ip pim neighbor-filter *access_list*
no ip pim neighbor-filter *access_list*
default ip pim neighbor-filter *access_list*

Parameter Description

Parameter	Description
access_list	Access control list supporting numerical ACL in the range 1 to 99 and name ACL

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide Neighbor filtering can enhance the security of a PIM-enabled network and provide neighbor restriction. As long as a neighbor is denied by the access list, PIM-SM will not establish the peering relationship with this neighbor or terminate the established peering relationship with this neighbor.

Configuration Examples The following example blocks the neighbor address 192.168.1.5..

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
```

```
Ruijie(config-if)# ip pim neighbor-filter 14
Ruijie(config-if)# exit
Ruijie(config)# access-list 14 deny 192.168.1.5 0.0.0.255
```

Related Commands

Command	Description
access-list	N/A

Platform Description N/A

6.13 ip pim neighbor-tracking

Use this command to disable join restraint on the interface.
Use the **no** or **default** form of this command to restore the default setting.
ip pim neighbor-tracking
no ip pim neighbor-tracking
default ip pim neighbor-tracking

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode Interface configuration mode

Usage Guide Use this command to disable join restraint on the interface. With join constraint enabled, the interface is constrained not to send its Join message to the upstream neighbor when it receives the Join message that its neighbor sends to the upstream neighbor. On the other hand, with join constrain disabled, the interface will send its Join message to the upstream neighbor when it receives the Join message that its neighbor sends to the upstream neighbor. This function allows upstream routers to track how many receivers in downstream in accord with all received Join messages.

Configuration Examples The following example disables join restraint on the interface.

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim neighbor-tracking
```

Related Commands

Command	Description
ip pim propagation-delay	N/A

Platform Description N/A

6.14 ip pim override-interval

Use this command to set the override-interval on the interface.

Use the **no** or **default** form of this command to restore the default setting.

ip pim override-interval *milliseconds*

no ip pim override-interval

default ip pim override-interval

Parameter Description

Parameter	Description
interval-milliseconds	In the range from 1 to 65535 in the unit of milliseconds

Defaults The default is 2500 milliseconds.

Command Mode Interface configuration mode

Usage Guide Use this command to set the override-interval for the interface.

⚠ Change of propagation delay or prune delay will influence the override interval of Join/prune message. As specified in the protocol, the override interval of Join/prune message must be less than its hold time or otherwise this will cause temporary interruption.

Configuration Examples The following example sets the override-interval as 3000 milliseconds.

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config)# ip pim override-interval 3000
```

Related Commands

Command	Description
ip pim propagation-delay	N/A

Platform Description N/A

6.15 ip pim probe-interval

Use this command to set the register probe interval.

Use the **no** or **default** form of this command to restore the default setting.

ip pim probe-interval *seconds*
no ip pim probe-interval
default ip pim probe-interval

Parameter Description

Parameter	Description
interval-seconds	In the range from 1 to 65535 seconds

Defaults The default is 5 seconds.

Command Mode Global configuration mode

Usage Guide Use this command to set the registration probe time. The DR can send the null registration message to the RP in a period before the registration suppression time expires. This period is called probe time of null registration packet.

The probe time must be less than half of registration suppression time. Furthermore, 3* registration suppression time plus registration probe time should be no more than 65535s or otherwise the system triggers an alarm.

Configuration Examples The following example sets the probe time to 6 seconds.

```
Ruijie# configure terminal
Ruijie(config)# ip pim probe-interval 6
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.16 ip pim propagation-delay

Use this command to set the propagation-delay on the interface.
Use the **no** or **default** form of this command to restore the default setting.
ip pim propagation-delay *milliseconds*
no ip pim propagation-delay
default ip pim propagation-delay

Parameter Description

Parameter	Description
interval-milliseconds	In the range from 1 to 32765 milliseconds

Defaults The default is 500 milliseconds.

Command Mode Interface configuration mode

Usage Guide Use this command to set the propagation-delay for the interface.

> Change of propagation delay or prune delay will influence the override interval of Join/prune message. As specified in the protocol, the override interval of Join/prune message must be less than its hold time or otherwise this will cause temporary interruption.

Configuration Examples The following example sets the propagation delay to 600 milliseconds.

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config)# ip pim propagation-delay 600
```

Related Commands

Command	Description
ip pim override-interval	N/A
Ip pim neighbor-tracking	N/A

Platform Description N/A

6.17 ip pim query-interval

Use this command to set the interval to send the hello packets.
Use the **no** or **default** form of this command to restore the default setting.
ip pim query-interval *seconds*
no ip pim query-interval
default ip pim query-interval

Parameter Description

Parameter	Description
interval-seconds	Interval to send the Hello message, in the range from 1 to 65535 in the unit of seconds.

Defaults The default is 30 seconds.

Command Mode Interface configuration mode

Usage Guide Upon updating the interval to send the Hello message, the time of holding the Hello message is updated by the following principle: The hold time is updated to be 3.5 times the transmission interval.

If the transmission interval*3.5 is more than 65535, the hold time is updated to 18752.

Configuration Examples The following example sets the interval to send the hello packets to 123 seconds.

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config)# ip pim query-interval 123
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.18 ip pim register-decapsulate-forward

Use this command to enable the RP to decapsulate the register packets and forward the multicast packets.
Use the **no** or **default** form of this command to restore the default setting.
ip pim register-decapsulate-forward
no ip pim register-decapsulate-forward
default ip pim register-decapsulate-forward

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide Use this command to implement the decapsulate of the pim sm registration packets with the multicast data packets received on the candidate RP and forward the multicast data packets.
As the decapsulate and forward are performed by the software, it is not recommended to configure this command in the case that many registration packets need to be decapsulated and forwarded, which may cause the CPU busy with this function configured.

Configuration Examples The following example enables the RP to decapsulate the register packets and forwards the multicast packets.

```
Ruijie# configure terminal
Ruijie(config)# ip pim register-decapsulate-forward
```

Related

Command	Description

Commands		
	N/A	N/A

Platform Description N/A

6.19 ip pim register-checksum-wholepkt

Use this command to calculate the checksum of the whole register packet.
Use the **no** or **default** form of this command to restore the default setting.
ip pim register-checksum-wholepkt [**group-list** *access-list*]
no ip pim register-checksum-wholepkt [**group-list** *access-list*]
default ip pim register-checksum-wholepkt [**group-list** *access-list*]

Parameter Description

Parameter	Description
access-list	Access-list: access control list supporting numerical ACL in the range from100 to 199 and from1300 to 1999 and name ACL. Group-list access-list :all multicast packets use this configuration by default

Defaults By default, the checksum of register messages calculates the head of PIM message and register message rather than the whole PIM message

Command Mode Global configuration mode

Usage Guide Some vendors calculate checksum based on the overall registration packets. Ruijie Networks introduces this function for the compatibility with devices of other vendors.

Configuration Examples The following example calculates the checksum of the whole register packet..

```
Ruijie# configure terminal
Ruijie(config)#ip pim register-checksum-wholepkt group-list 99
Ruijie(config)# access-list 99  permit 225.1.1.1 0.0.0.255
```

Related Commands

Command	Description
access-list	N/A

Platform Description N/A

6.20 ip pim register-rate-limit

Use this command to limit the rate of register packets. Use the **no** form of this command to restore the default setting.

ip pim register-rate-limit *rate*

no ip pim register-rate-limit

default ip pim register-rate-limit

Parameter Description

Parameter	Description
rate	Maximum number of register packets that can be sent per second, in the range from 1 to 65535

Defaults By default, there is no rate limitation on register messages.

Command Mode Global configuration mode

Usage Guide This command is used to configure speed of transmitting register packet in each (S, G) status, not the speed of transmitting register packets in the system. Using this command will decrease the load of source DR and RP. The register packets can be transmitted at the speed within the limit.

Configuration Examples The following example limits the rate of register packets.

```
Ruijie# configure terminal
Ruijie(config)# ip pim register-rate-limit 3000
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.21 ip pim register-rp-reachability

Use this command to check RP reachability before sending register packets**.**

Use the **no** or **default** form of this command to restore the default setting.

ip pim register-rp-reachability

no ip pim register-rp-reachability

default ip pim register-rp-reachability

Parameter

Parameter	Description

Description

N/A	N/A

Defaults By default, the RP reachability is not checked before sending register packets.

Command Mode Global configuration mode

Usage Guide This command is used to check the RP reachability before sending register packets.. If not, register packets are not transmitted.

Configuration Examples The following example checks the RP reachability before sending register packets.

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim register-rp-reachability
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.22 ip pim register-source

Use this command to specify the source IP address of the register packets.
Use the **no** or **default** form of this command to restore the default setting.
ip pim register-source { *local_address* | *interface-type interface-number* }
no ip pim register-source
default ip pim register-source

Parameter Description

Parameter	Description
interface-type interface-number	Interface whose IP address is used as the source IP address of register packets
local_address	Specifies the source IP address of the register packet.

Defaults By default, the source IP address of register packets is the IP address of the DR interface connecting the multicast source.

Command Mode Global configuration mode

Usage Guide This command is used to configure the source IP address of register messages.

The source IP address must be reachable. When RP receives the register packet, it transmits Register-Stop packet, using its source IP address as the destination IP address of the Register-Stop packet.

It is not necessary to enable the PIM.

Configuration Examples The following example specifies the source IP address of the register packets.

```
Ruijie# configure terminal
Ruijie(config)# ip pim register-source 192.168.195.80
Ruijie(config)# ip pim register-source g 0/3
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.23 ip pim register-suppression

Use this command to set the register suppression time.
Use the **no** or **default** form of this command to restore the default setting.
ip pim register-suppression *seconds*
no ip pim register-suppression
default ip pim register-suppression

Parameter Description

Parameter	Description
suppression	Suppression time in the range from 1 to 65535 in the unit of seconds.

Defaults The default is 60 seconds.

Command Mode Global configuration mode

Usage Guide Executing this command on the DR will change the register packet suppression time configured. if the **ip pim rp-register-kat** command is not configured, executing this command on RP will modify the period of RP keepalive.

Configuration Examples The following example sets the register suppression time to 100 seconds.

```
Ruijie# configure terminal
Ruijie(config)# ip pim register-suppression 100
```

Related

Command	Description

Commands		
	N/A	N/A

Platform Description N/A

6.24 ip pim rp-address

Use this command to configure the static RP.

Use the **no** or **default** form of this command to restore the default setting.

ip pim rp-address *rp-address* [*access_list*]

no ip pim rp-address *rp-address* [*access_list*]

default ip pim rp-address *rp-address* [*access_list*]

Parameter Description

Parameter	Description
rp-address	IP address of RP
access_list	Access control list supporting numerical ACL in the range 1 to 99 and 1300 to 1999 and name ACL. All multicast groups are supported by default.

Defaults No IP address is configured for the static RP by default.

Command Mode Global configuration mode

Usage Guide This system supports the configuration of multicast static RP, as well as the configuration of static RP and BSR mechanisms at the same time. When you use this command, note that:

If both the BSR mechanism and the static RP configuration take effect, the dynamic configuration takes precedence.

You can configure multiple multicast groups (using ACL) or all multicast groups (not using ACL) for the static RP. But a static RP can be configured only once.

If there are more than one static RP in a multicast group, the one of the highest IP address is used.

Only the addresses permitted by ACL are valid multicast groups. By default, all the multicast groups 224/4 are permitted.

After configuration is performed, the static RP's source IP address is inserted to the group range-based static RP group tree structure. Each group range-based static multicast group maintains the chain list structure of a static RP group. This chain list is sorted in descending order of IP address. When you select a RP from a static RP group, the first entry, namely the one with the largest IP address, will be selected first.

Deleting a static IP address also deletes this address from all the existing static RP groups and selects one from in the existing RP group tree structure as the RP address.

Configuration The following example specifies the source IPv6 address of the register packet..

Examples

```
Ruijie# configure terminal
Ruijie(config)# ip pim rp-address 210.34.0.55 4
Ruijie(config)# access-list 4 permit 255.1.1.1 0.0.0.255
```

Related Commands

Command	Description
access-list	N/A

Platform Description N/A

6.25 ip pim rp-candidate

Use this command to configure the C-RP.

Use the **no** or **default** form of this command to restore the default setting.

ip pim rp-candidate *interface-type interface-number* [**priority** *priority-value*] [**interval** *seconds*] [**group-list** *access_list*]

no ip pim rp-candidate [*interface-type interface-number*]

default ip pim rp-candidate [**interface-type** *interface-number*]

Parameter Description

Parameter	Description
interface-type interface-number	Interface type and interface number
priority-value	(Optional) Priority in the range 0 to 255, 192 by default
-seconds	(Optional) Interval in the range 0 to 16383 seconds, 60s by default
access_list	(Optional) Numerical ACL in the range 1 to 99 or name ACL. By default, all multicast groups are permitted.

Defaults No C-RP is configured by default.

Command Mode Global configuration mode

Usage Guide In the PIM-SM protocol, the shared tree RPT created by the multicast routing uses the Rendezvous Point (RP) as the root node. RP is elected by the candidate RPs. After BSR is elected, all C-RPs sends C-RP messages in the unicast form to BSR regularly, and BSR spreads the messages throughout the PIM domain.

To specify an interface as the candidate RP of a specific group, execute this command with ACL. Note that the group range is calculated only based on the permit rule, not the deny rule.

Configuration Examples The following example configures the C-RP.

```
Ruijie# configure terminal
```

```
Ruijie(config)# ip pim rp-candidate g 0/3 priority 200 group-list 3 interval
70
Ruijie(config)# access-list 3 permit 255.1.1.1 0.0.0.255
```

Related Commands

Command	Description
access-list	N/A

Platform Description N/A

6.26 ip pim rp-register-kat

Use this command to set the KAT interval on the RP.

Use the **no** or **default** form of this command to restore the default setting.

ip pim rp-register-kat *seconds*

no ip pim rp-register-kat

default ip pim rp-register-kat

Parameter Description

Parameter	Description
seconds	KAT timer time in the range from 1 to 65525 in the unit of seconds

Defaults The default is 210 seconds.

Command Mode Global configuration mode

Usage Guide This command is used to configure the KAT interval of RP.

Configuration Examples The following example sets the KAT interval on the RP to 250 seconds.

```
Ruijie# configure terminal
Ruijie(config)# ip pim rp-register-kat 250
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.27 ip pim sparse-mode

Use this command to enable PIM-SM on the interface.

Use the **no** or **default** form of this command to restore the default setting.

ip pim sparse-mode

no ip pim sparse-mode

default ip pim sparse-mode

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide This command is used to enable PIM-SM on the interface.

- You need to enable multicast routing forwarding in the global configuration mode before enabling PIM-SM. Otherwise, multicast packets cannot be forwarded even though you enable PIM-SM.
- During the execution of this command, if the prompt "Failed to enable PIM-SM on <Interface Name>, resource temporarily unavailable, please try again" appears, re-execute this command.
- During the execution of this command, if the prompt "PIM-SM Configure failed! VIF limit exceeded in NSM!!!" appears; it indicates the allowed configured interface number exceeds the upper limit of the multicast interfaces. In this case, if you still need to enable PIM-SM on the interface, delete the unnecessary PIM-SM, PIM-DM or DVMRP interfaces.

Configuration Examples The following example enables PIM-SM on the interface.

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim sparse-mode
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.28 ip pim spt-threshold

Use this command to enable the SPT switching function.
Use the **no** or **default** form of this command to restore the default setting.
ip pim spt-threshold [**group-list** *access-list*]
no ip pim spt-threshold [**group-list** *access-list*]
default ip pim spt-threshold[**group-list** *access-list*]

Parameter Description

Parameter	Description
access_list	(Optional) Numerical ACL in the range 1 to 99 and 1300 to 1999 or name ACL. By default, all multicast groups are permitted for SPT switching.

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide This command is used to enable the RP tree-to-SPT tree switching function in a specific multicast group range (using **group-list**) or all multicast groups (not using **group-list**) .

Configuration Examples The following example enables the SPT switching function.

```
Ruijie# configure terminal
Ruijie(config)# ip pim spt-threshold
Ruijie(config)# ip pim spt-threshold group-list 12
Ruijie(config)# access-list 12 permit 225.1.1.1 0.0.0.255
```

Related Commands

Command	Description
access-list	N/A

Platform Description N/A

6.29 ip pim ssm

Use this command to enable SSM and set the SSM group address range.
Use the **no** or **default** form of this command to restore the default setting.
ip pim ssm { **default** | **range** *access_list* }
no ip pim ssm
default ip pim ssm

Parameter Description

Parameter	Description
default	Multicast groups of 232/8
range *access_list*	Numerical ACL in the range 1 to 99 and 1300 to 1999 or name ACL.

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide This command is used to enable PIM-SSM (or in some specific multicast groups).

Configuration Examples The following command enables SSM and sets the SSM group range to 232/8:

```
Ruijie# configure terminal
Ruijie(config)# ip pim ssm default
The following command sets the source-specific multicast with ACL 10.
Ruijie(config)# ip pim ssm range 10
Ruijie(config)# access-list 10 permit 232.0.0.1 0.0.0.255
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.30 ip pim triggered-hello-delay

Use this command to configure Triggered-Hello-Delay time on the interface.

Use the **no** or **default** form of this command to restore the default setting.

ip pim triggered-hello-delay *seconds*

no ip pim triggered-hello-delay

default ip pim triggered-hello-delay

Parameter Description

Parameter	Description
interval-seconds	In the range from 1 to 5 in the unit of seconds.

Defaults The default is 5 seconds.

Command Mode Interface configuration mode

Usage Guide Use this command to configure the triggered-hello-delay of the interface. When the interface starts or detects a new neighbor, it uses the trigger-hello-delay to generate random time, and then the interface sends the Hello message in random time.

Configuration Examples The following command sets the triggered-hello-delay to 3 seconds.

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim triggered-hello-delay 3
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.31 show debugging

Use this command to display the debugging status.

show debugging

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide This command is used to turn on debugging switch.

Configuration Examples The following example displays the debugging status.

```
Ruijie # show debugging
PIM-SM Debugging status:
PIM packet debugging is on.
```

Related Commands

Command	Description
N/A	N/A

Platform N/A

Description

6.32 show ip pim sparse-mode bsr-router

Use this command to display the BSR information

show ip pim sparse-mode bsr-router

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide This command is used to display BSR information.

Configuration Examples The following example displays BSR information.

```
Ruijie# show ip pim sparse-mode bsr-router
PIMv2 Bootstrap information
This system is the Bootstrap Router (BSR)
BSR address: 192.168.127.1
Uptime:     01d23h14m, BSR Priority: 64, Hash mask length: 10
Next bootstrap message in 00:00:42
Role: Candidate BSR   Priority: 64, Hash mask length: 10
State: Elected BSR
Candidate RP: 30.30.100.200(GigabitEthernet 0/3)
Advertisement interval 60 seconds
Next Cand_RP_advertisement in 00:00:32
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.33 show ip pim sparse-mode interface

Use this command to display PIM-SM interface information.

show ip pim sparse-mode interface [*interface-type interface-number*] [**detail**]

Parameter Description

Parameter	Description
interface-type interface-number	(Optional) Interface name. This command takes effect for all interfaces by default.
detail	(Optional) Displays the details of an interface.

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide This command displays the PIM-SM information on the interface.

Configuration Examples The following example displays the PIM-SM information on the interface.

```
Ruijie #show ip pim sparse-mode interface detail
GigabitEthernet 0/3 (vif 2):
  Address 30.30.100.200, DR 30.30.100.200
  Hello period 30 seconds, Next Hello in 13 seconds
  Triggered Hello period 5 seconds
  Neighbors:
   30.30.100.1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.34 show ip pim sparse-mode local-members

Use this command to display the local IGMP information on the PIM-SM interface.

show ip pim sparse-mode local-members [*interface-type interface-number*]

Parameter Description

Parameter	Description
interface-type interface-number	(Optional) Interface name. This command takes effect for all interfaces by default.

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide This command displays the local IGMP information on the PIM-SM interface.

Configuration Examples The following example displays the local IGMP information on the PIM-SM interface.

```
Ruijie (config-if)#sh ip pim sparse-mode local-members
PIM Local membership information
GigabitEthernet 0/3:
(*, 225.1.1.1) : Include
Loopback 1:
GigabitEthernet 0/5:
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.35 show ip pim sparse-mode mroute

Use this command to display the PIM-SM routing information.

show ip pim sparse-mode mroute [*group-or-source-address* [*group-or-source-address*]]

Parameter Description

Parameter	Description
group-or-source-address	Group IP address or source IP address. Two addresses cannot both be the group addresses or the source addresses.

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide This command is used to display routing information. Only one group IP address, one source IP address or one group IP address-source IP address pair can be configured at a time. You can also specify no group IP address or source IP address.

Configuration Examples The following example displays the PIM-SM routing information.

```
Ruijie#show ip pim sparse-mode mroute
```

Related Commands

Command	Description

N/A	N/A

Platform Description N/A

6.36 show ip pim sparse-mode neighbor

Use this command to display the neighbor information.

show ip pim sparse-mode neighbor [**detail**]

Parameter Description

Parameter	Description
detail	(Optional) Displays the details of an interface.

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide This command displays the information on neighbors.

Configuration Examples The following example displays the neighbor information.

```
Ruijie# show ip pim sparse-mode neighbor detail
Nbr 5.5.5.3 (VLAN 1)
  Expire in 81 seconds
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.37 show ip pim sparse-mode nexthop

Use this command to display the next hop information, including the interface ID, address and metric.

show ip pim sparse-mode nexthop

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide This command displays the information on the next hop, including interface ID, IP address and metric.

Configuration Examples N/A

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.38 show ip pim sparse-mode rp-hash

Use this command to display the RP information corresponding to the group address.

show ip pim sparse-mode rp-hash *group-address*

Parameter Description

Parameter	Description
group-address	Group address to be resolved

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide This command displays the RP information corresponding to the group address.

Configuration Examples The following example displays the RP information corresponding to the group address..

```
Ruijie# show ip pim sparse-mode rp-hash 255.1.1.1
RP: 30.30.100.1
Info source: 30.30.100.1, via bootstrap
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.39 show ip pim sparse-mode rp mapping

Use this command to display the information on all RPs and the multicast groups they serve.

show ip pim sparse-mode rp mapping

Parameter Description

Parameter	Description
mapping	All group and RP information

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide This command displays the information on all RPs and the multicast groups they serve.

Configuration Examples The following example displays the information on all RPs and the multicast groups they serve..

```
Ruijie# show ip pim sparse-mode rp mapping
PIM Group-to-RP Mappings
Group(s): 224.0.0.0/4
RP: 30.30.200.1
Info source: 30.30.200.1, via bootstrap, priority 192
Uptime: 00:00:51, expires: 00:01:39
RP: 30.30.100.1
Info source: 30.30.200.1, via bootstrap, priority 192
Uptime: 00:19:14, expires: 00:01:38
Group(s): 224.0.0.0/4, Static
RP: 100.100.100.100
Uptime: 00:45:35
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.40 show ip pim sparse-mode track

Use this command to display the number of sent and received PIM packets during the period from the beginning of the statistics till now.

show ip pim sparse-mode track

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide This command is used to display the number of sent and received PIM packets during the period from the beginning of the statistics till now.. When the system starts up, it sets the start time of the statistics. The start time of the statistics is reconfigured and the PIM packet counter is cleared on calling the **clear ip pim sparse-mode track** every time.

Configuration Examples The following example displays the number of sent and received PIM packets during the period from the beginning of the statistics till now.

```
Ruijie # show ip pim sparse-mode track
             PIM packet counters track
Elapsed time since counters cleared: 00:04:03
                        received   sent
Valid PIMSM packets:    0          8
Hello:                     0          8
Join-Prune:             0          0
Register:               0          0
Register-Stop:          0          0
Assert:                 0          0
BSM:                    0          0
C-RP-ADV:                  0          0
PIMDM-Graft:             0
PIMDM-Graft-Ack :       0
PIMDM-State-Refresh:    0
Unknown PIM Type:       0
Errors:
Malformed packets:                 0
Bad checksums:                     0
Send errors:                       0
Packets received with unknown PIM version:     0
```

Related Commands

Command	Description
N/A	N/A

Platform N/A

Description

7 PIM-SMv6 Commands

7.1 clear ipv6 mroute

Use this command to clear multicast routing entries.

clear ipv6 mroute {* | *ipv6_group_address* | *ipv6_group_address ipv6_source_address* }

Parameter Description

Parameter	Description
*	Deletes all the multicast routing entries.
ipv6_group_address	Deletes the multicast routing entries of the specific group.
ipv6_group_address source_address	Deletes the multicast routing entries of the specific group and source IPv6 address.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Multicast routing entries can be deleted manually.

Configuration Examples The following example clears the multicast routing entries.

```
Ruijie# clear ipv6 mroute *
Ruijie# clear ipv6 mroute ff66::6666
Ruijie# clear ipv6 mroute ff66::6666 3333::3333
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.2 clear ipv6 mroute statistics

Use this command to delete the statistics of the multicast routing entries.

clear ipv6 mroute statistics {* | *ipv6_group_address[ipv6_source_address*] }

Parameter Description

Parameter	Description
*	Deletes the statistics of all multicast routing entries.

ipv6_group_address	Deletes the statistics of the multicast routing entries of the specific group.
ipv6_group_address ipv6_source_address	Deletes the statistics of the multicast routing entries of the specific group and source IPv6 address.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide The statistics of multicast routing entries can be deleted manually.

Configuration Examples The following example deletes the statistics of the multicast routing entries.

```
Ruijie# clear ipv6 mroute statistics *
Ruijie# clear ipv6 mroute statistics ff66::6666
Ruijie# clear ipv6 mroute statistics ff66::6666 3333::3333
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.3 clear ipv6 pim sparse-mode bsr rp-set

Use this command to clears the RP information learnt dynamically.

clear ipv6 pim sparse-mode bsr rp-set *

Parameter Description

Parameter	Description
*	Clears all RP-SET.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide All the RP information learnt dynamically can be cleared manually.

Configuration Examples The following example clears the RP information learnt dynamically.

```
Ruijie# clear ipv6 pim sparse-mode bsr rp-set *
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

7.4 clear ipv6 pim sparse-mode track

Use this command to reconfigure the start time of the statistics and clear the PIMv6 packet counter.

clear ipv6 pim sparse-mode track

Parameter Description	Parameter	Description
	N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to reconfigure the start time of the statistics and clear the PIMv6 packet counter.

Configuration Examples The following example clears the PIMv6 packet counter.

```
Ruijie# clear ipv6 pim sparse-mode track
```

Related Commands	Command	Description
	show ipv6 pim sparse-mode track	N/A

Platform Description N/A

7.5 ipv6 pim accept-bsr list

Use this command to confine the BSR address range. Use the **no** or **default** form this command to restore the default setting.

ipv6 pim accept-bsrr list *ipv6_access-list*

no ipv6 pim accept-bsr

default ipv6 pim accept-bsr

Parameter	Parameter	Description

Description

list *ipv6_access-list*	IPv6 standard name ACL

Defaults By default, the PIM-SMv6 router receives all external BSM packets.

Command Mode Global configuration mode

Usage Guide Use this command to confine the range of the legal BSR.

Configuration Examples The following example confines the BSR address range.

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim accept-bsr list bsr-list
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.6 ipv6 pim accept-crp list

Use this command to confine the C-RP address range and the multicast group address range it serves. Use the no or default form of this command to restore the default setting,

ipv6 pim accept-crp list ipv6_access-list

no ipv6 pim accept-crp

default ipv6 pim accept-crp-with-null-group

Parameter Description

Parameter	Description
list *ipv6_access-list*	Extended IPv6 ACL

Defaults No address is filtered by default.

Command Mode Global configuration mode

Usage Guide With this command configured on the candidate BSR, when this BSR becomes the elected BSR, it is able to limit the address range of the legal C-RP and the multicast group range it serves.

Configuration Examples The following example confines the C-RP address range and the multicast group address range it serves..

```
Ruijie (config)# comfigure terminal
Ruijie (config)# ipv6 pim accept-crp list crp-list
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.7 ipv6 pim accept-crp-with-null-group

Use this command to receive the C-RP-ADV packets whose prefix-count is 0. Use the **no** or **default** form of this command to restore the default setting.

ipv6 pim accept-crp-with-null-group

no ipv6 pim accept-crp-with-null-group

default ipv6 pim accept-crp

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide With this command configured on the candidate BSR, when this BSR becomes the elected BSR, it is able to receive the C-RP-ADV packets whose prefix-count is 0, and considers this C-RP supports all groups.

Configuration Examples The following example receives the C-RP-ADV packets whose prefix-count is 0.

```
Ruijie (config)# configure terminal
Ruijie (config)# ipv6 pim accept-crp-with-null-group
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.8 ipv6 pim accept-register list

Use this command to confine the address range of the (S,G) entry of the register packets. Use the **no** or **default** form of this command to restore the default setting.

ipv6 pim accept-register { **list** *ipv6_access-list* [**route-map** *map-name*] | **route-map** *map-name* [**list** *ipv6_access-list*] }

no ipv6 pim accept-register

default ipv6 pim accept-register

Parameter Description

Parameter	Description
list *ipv6_access-list*	Access control list supporting name ACL
route-map *map-name*	Defines the routing map rule

Defaults The range is not confined by default.

Command Mode Global configuration mode

Usage Guide This command is used to confine the source IPv6 address of register messages on RP. If the unauthorized register source is received, the RP will return the Register-Stop message immediately.

Configuration Examples The following example confines the source IPv6 address of register packets on the RP.

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim accept-register list register-access-list
Ruijie(config)# ipv6 access-list register-access-list
The following example denies the register message of the specified source
fe80::2d0:f8ff:fe22:33ad
Ruijie(config-ipv6-acl)# deny ipv6 fe80::2d0:f8ff:fe22:33ad/128 any
```

Related Commands

Command	Description
ipv6 access-list	N/A

Platform Description N/A

7.9 ipv6 pim bsr-border

Use this command to configure the BSR border. Use the **no** or **default** form of this command to restore the default setting.

ipv6 pim bsr-border

no ipv6 pim bsr-border
default ipv6 pim bsr-border

Parameter Description

Parameter	Description
N/A	N/A

Defaults No BSR border is configured by default.

Command Mode Interface configuration mode

Usage Guide To restrain BSM flooding, configure BSR border on the interface so that the interface drops BSM packets upon receiving them and the BSM packets are not forwarded from this interface.

Configuration Examples The following example sets the BSR border on the interface *g 0/3*.

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ipv6 pim bsr-border
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.10 ipv6 pim bsr-candidate

Use this command to configure the C-BSR. Use the **no** or **default** form of this command to restore the default setting.
ipv6 pim bsr-candidate *interface-type interface-number* [*hash-mask-length* [*priority-value*]]
no ipv6 pim bsr-candidate
default ipv6 pim bsr-candidate

Parameter Description

Parameter	Description
interface-type interface-number	Interface type and number.
hash-mask-length	(Optional) HASK mask length configured for electing the RP in the range from 0 to 128. The default is 126.
priority-value	(Optional) Priority configured for the candidate BSR in the range from 0 to 255. The default is 64.

Defaults No C-BSR is configured by default.

Command Mode Global configuration mode

Usage Guide A PIM-SMv6 domain must contain a unique BootStrap Router (BSR). BSR is responsible for collect and issue RP information. A unique recognized BSR is elected among multiple candidate BSRs through the bootstrap packet. Before BSR information is available, C-BSRs consider them to be the BSR, and regularly send bootstrap packets using the multicast address 224.0.0.13 in the PIM-SM domain. This packet contains the address and priority of the BSR.
This command allows the device to send a bootstrap message to all the PIM neighbors using the assigned BSR address. Each neighbor compares the original BSR address with the address in the received bootstrap message. If the IPv6 address of the received address is equal to or larger than the original address, each neighbor saves this received address as the BSR address. Otherwise, they will discard this message.
The current device considers itself to be BSR until it receives a bootstrap message from another candidate BSR and is notified that it has a higher priority value (or the same priority value, but with a larger IPv6 address).

Configuration Examples The following example s configures the C-BSR.

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim bsr-candidate g 0/3 30 100
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.11 ipv6 pim dr-priority

Use this command to configure the DR priority, Use the **no** or **default** form of this command to restore the default setting.
ipv6 pim dr-priority *priority-value*
no ipv6 pim dr-priority
default ipv6 pim dr-priority

Parameter Description

Parameter	Description
priority-value	The larger the value, the higher the priority is. The range is from 0 to 4294967294. The default is 1.

Defaults The default is 1.

Command Mode Interface configuration mode

Usage Guide To select a DR:

- If the priority parameter of the Hello message is set for the devices in a LAN, the one of the highest priority is elected to be the DR. If several devices has the same priority, the one of the largest IP address is elected to be the DR.
- If the priority parameter of the Hello message is not set for the devices in a LAN, the one of the largest IP address is elected to be the DR.

Configuration Examples The following example configures the DR priority.

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ipv6 pim dr-priority 11234
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.12 ipv6 pim ignore-rp-set-priority

Use this command to ignore the RP priority. Use the **no** or **default** form of this command to restore the default setting.

ipv6 pim ignore-rp-set-priority

no ipv6 pim ignore-rp-set-priority

default ipv6 pim ignore-rp-set-priority

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, the C-RP with higher priority is selected.

Command Mode Global configuration mode

Usage Guide This command is used to ignore the priority of the RP corresponding to the multicast group.

Configuration Examples The following example ignores the RP priority.

```
Ruijie# configure terminal
Ruijie(config-if)# ipv6 pim ignore-rp-set-priority
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.13 ipv6 pim jp-timer

Use this command to set the interval to send the join/prune message. Use the **no** or **default** form of this command to restore the default setting.

ipv6 pim jp-timer *seconds*

no ipv6 pim jp-timer

default ipv6 pim jp-timer

Parameter Description

Parameter	Description
seconds	Interval to send the join/prune message in the range from 1 to 65535 in the unit of seconds

Defaults The default is 60.

Command Mode Global configuration mode

Usage Guide This command is used to set the interval to send the Join/Prune message.

Configuration Examples The following example sets the interval to send the Join/Prune message to 100 seconds.

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim jp-timer 100
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.14 ipv6 pim neighbor-filter

Use this command to confine the neighbor address range. Use the **no** or **default** form of this command to restore the default setting.
ipv6 pim neighbor-filter *ipv6_access-list*
no ipv6 pim neighbor-filter *ipv6_access-list*
default ipv6 pim neighbor-filter *ipv6_access-list*

Parameter Description

Parameter	Description
ipv6_access_list	Access control list supporting name ACL

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide Neighbor filtering can enhance the security of a PIM-enabled network and provide neighbor restriction. As long as a neighbor is denied by the access list, PIM-SM will not establish the peering relationship with this neighbor or terminate the established peering relationship with this neighbor.

Configuration Examples The following example block the neighbor address fe80::2d0:f8ff:fe22:33ad/128.

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ipv6 pim neighbor-filter acl
Ruijie(config-if)# exit
Ruijie(config-if)# ipv6 access-list acl
The following example denies the neighbor fe80::2d0:f8ff:fe22:33ad
Ruijie(config-ipv6-acl)#  deny ipv6 fe80::2d0:f8ff:fe22:33ad/128 any
```

Related Commands

Command	Description
ipv6_access-list	N/A

Platform Description N/A

7.15 ipv6 pim neighbor-tracking

Use this command to disable join restraint on the interface. Use the **no** or **default** form of this command to restore the default setting.
ipv6 pim neighbor-tracking

no ipv6 pim neighbor-tracking
default ipv6 pim neighbor-tracking

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode Interface configuration mode

Usage Guide Use this command to disable join restraint on the interface. With join constraint enabled, the interface is constrained not to send its Join message to the upstream neighbor when it receives the Join message that its neighbor sends to the upstream neighbor. On the other hand, with join constrain disabled, the interface will send its Join message to the upstream neighbor when it receives the Join message that its neighbor sends to the upstream neighbor. This function allows upstream routers to track how many receivers in downstream in accord with all received Join messages.

Configuration Examples The following example disables join restraint on the interface.

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ipv6 pim neighbor-tracking
```

Related Commands

Command	Description
ipv6 pim propagation-delay	N/A

Platform Description N/A

7.16 ipv6 pim override-interval

Use this command to set the override-interval on the interface, Use the **no** or **default** form of this command to restore the default setting.
ipv6 pim override-interval *milliseconds*
no ipv6 pim override-interval
default ipv6 pim override-interval

Parameter Description

Parameter	Description
interval-milliseconds	In the range 1 to 65535 in the unit of milliseconds

Defaults The default is 2500 milliseconds.

Command Mode Interface configuration mode

Usage Guide Use this command to set the override-interval for the interface.

> Change of propagation delay or prune delay will influence the override interval of Join/prune message. As specified in the protocol, the override interval of Join/prune message must be less than its hold time or otherwise this will cause temporary interruption.

Configuration Examples The following example sets the override-interval to 3000 milliseconds.

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config)# ipv6 pim override-interval 3000
```

Related Commands

Command	Description
ipv6 pim propagation-delay	N/A

Platform Description N/A

7.17 ipv6 pim probe-interval

Use this command to set the register probe interval. Use the **no** or **default** form of this command to restore the default setting.

ipv6 pim probe-interval *seconds*

no ipv6 pim probe-interval

default ipv6 pim probe-interval

Parameter Description

Parameter	Description
seconds	In the range from 1 to 65535 in the unit of seconds

Defaults The default is 5 seconds.

Command Mode Global configuration mode

Usage Guide Use this command to set the registration probe time. The DR can send the null registration message to the RP in a period before the registration suppression time expires. This period is called probe time of null registration packet.

The probe time must be less than half of registration suppression time. Furthermore, 3* registration suppression time plus registration probe time should be no more than 65535s or otherwise the system triggers an alarm.

Configuration Examples The following example sets the probe time as 6 seconds.

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim probe-interval 6
```

Related Commands

Command	Description
ipv6 pim register-suppression	N/A

Platform Description N/A

7.18 ipv6 pim propagation-delay

Use this command to set the propagation-delay on the interface. Use the **no** or **default** form of this command to restore the default setting.

ipv6 pim propagation-delay *milliseconds*

no ipv6 pim propagation-delay

default ipv6 pim propagation-delay

Parameter Description

Parameter	Description
interval-milliseconds	In the range from 1 to 32765 in the unit of milliseconds

Defaults The default is 500 milliseconds.

Command Mode Interface configuration mode

Usage Guide Use this command to set the propagation-delay for the interface.

Change of propagation delay or prune delay will influence the override interval of Join/prune message. As specified in the protocol, the override interval of Join/prune message must be less than its hold time or otherwise this will cause temporary interruption.

Configuration Examples The following example sets the propagation delay to 600 milliseconds.

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config)# ipv6 pim propagation-delay 600
```

Related Commands

Command	Description
ipv6 pim override-interval	N/A
ipv6 pim neighbor-tracking	N/A

Platform Description N/A

7.19 ipv6 pim query-interval

Use this command to set the interval to send the hellp packets. Use the **no** or **default** form of this command to restore the default setting.

ipv6 pim query-interval *seconds*

no ipv6 pim query-interval

default ipv6 pim query-interval

Parameter Description

Parameter	Description
seconds	Interval to send the Hello message in the range from 1 to 65535 in the unit of seconds

Defaults The default is 30.

Command Mode Interface configuration mode

Usage Guide Upon updating the interval to send the Hello message, the time of holding the Hello message is updated by the following principle: The hold time is updated to be 3.5 times the transmission interval. If the transmission interval*3.5 is more than 65535, the hold time is updated to 18725.

Configuration Examples The following example sets the interval to send the hello packets.

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config)# ipv6 pim query-interval 60
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.20 ipv6 pim register-checksum-wholepkt

Use this command to calculate the checksum of the whole register packet. Use the **no** or **default** form of this command to restore the default setting.

ipv6 pim register-checksum-wholepkt [**group-list** *ipv6_access-list*]

no ipv6 pim register-checksum-wholepkt [**group-list** *ipv6_access-list*]

default ipv6 pim register-checksum-wholepkt [**group-list** *ipv6_access-list*]

Parameter Description

Parameter	Description
group-list ipv6_access-list	Access-list: access control list supporting name ACL. Group-list ipv6_access-list :all multicast packets use this configuration by default

Defaults By default, the checksum of register messages calculates the head of PIM message and register message rather than the whole PIM message.

Command Mode Global configuration mode

Usage Guide Some vendors calculate checksum based on the overall registration packets. Ruijie Networks introduces this function for the compatibility with these vendors.

Configuration Examples The following example calculates the checksum of the whole register packet.

```
Ruijie# configure terminal
Ruijie(config)#ipv6 pim register-checksum-wholepkt group-list
checksum-access-list
Ruijie(config)# ipv6 access-list 99  checksum-access-list
Ruijie(config-ipv6-acl)# permit ipv6 any ff66::6666/64
```

Related Commands

Command	Description
ipv6 access-list	N/A

Platform Description N/A

7.21 ipv6 pim register-rate-limit

Use this command to limit the rate of register packets. Use the **no** or **default** form of this command to restore the default setting.

ipv6 pim register-rate-limit *rate*

no ipv6 pim register-rate-limit
default ipv6 pim register-rate-limit

Parameter Description

Parameter	Description
rate	Maximum number of register packets that can be sent per second, in the range from 1 to 65535.

Defaults By default, there is no rate limitation on register messages.

Command Mode Global configuration mode

Usage Guide This command is used to configure speed of transmitting register packet in each (S, G) status, not the speed of transmitting register packets in the system. Using this command will decrease the load of source DR and RP. The register packets can be transmitted at the speed within the limit.

Configuration Examples The following example limits the rate of register packets.

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim register-rate-limit 3000
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.22 ipv6 pim register-rp-reachability

Use this command to check RP reachability before sending register packets**.** Use the **no** or **default** form of this command to restore the default setting.
ipv6 pim register-rp-reachability
no ipv6 pim register-rp-reachability
default ipv6 pim register-rp-reachability

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, the RP reachability is not checked before sending register packets.

Command Global configuration mode

Mode

Usage Guide This command is used to check the RP reachability before transmission. If not, register packets are not transmitted.

Configuration Examples The following example checks the RP reachability before sending register packets.

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim register-rp-reachability
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.23 ipv6 pim register-source

Use this command to specify the source IPv6 address in the register packets. Use the **no** or **default** form of this command to restore the default setting.

ipv6 pim register-source { *ipv6_local_address* | *interface-type interface-number* }

no ipv6 pim register-source

default ipv6 pim register-source

Parameter Description

Parameter	Description
ipv6_local_address	Source IPv6 address of register packets
interface-type interface-number	Interface whose IPv6 address is used as the source IPv6 address of register packets

Defaults By default, the source IPv6 address of register packets is the IPv6 address of the DR interface connecting the multicast source.

Command Mode Global configuration mode

Usage Guide This command is used to configure the source IPv6 address of register messages.
The source IPv6 address must be reachable. When RP receives the register packet, it transmits Register-Stop packet, using its source IPv6 address as the destination IPv6 address of the Register-Stop packet.

⚠ It is not necessary to enable the PIM-SMv6 on the associated interfaces.

Configuration The following example configures the source IPv6 address of register messages.

Examples

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim register-source 3333::3333
Ruijie(config)# ipv6 pim register-source g 0/3
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.24 ipv6 pim register-suppression

Use this command to set the register suppression time. Use the **no** or **default** form of this command to restore the default setting.

ipv6 pim register-suppression *seconds*

no ipv6 pim register-suppression

default ipv6 pim register-suppression

Parameter Description

Parameter	Description
suppression	Suppression time in the range from 1 to 65535 in the unit of seconds.

Defaults The default is 60 seconds.

Command Mode Global configuration mode

Usage Guide Executing this command on the DR will change the register packet suppression time configured. if the ipv6 pim rp-register-kat command is not configured, executing this command on RP will modify the period of RP keepalive.

Configuration Examples The following example sets the register packet suppression time.

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim register-suppression 100
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.25 ipv6 pim rp-address

Use this command to configure the static RP. Use the **no** or **default** form of this command to restore the default setting.

ipv6 pim rp-address *ipv6_rp-address* [*ipv6_access_list*]

no ipv6 pim rp-address *ipv6_rp-address* [*ipv6_access-list*]

default ipv6 pim rp-address *ipv6_rp-address* [*ipv6_access-list*]

Parameter Description

Parameter	Description
ipv6_rp-address	IPv6 address of RP
ipv6_access_list	Access control list supporting name ACL

Defaults No IPv6 address is configured for the static RP by default.

Command Mode Global configuration mode

Usage Guide This system supports the configuration of multicast static RP, as well as the configuration of static RP and BSR mechanisms at the same time. When you use this command, note that:

- If both the BSR mechanism and the static RP configuration take effect, the dynamic configuration takes precedence.
- You can configure multiple multicast groups (using ACL) or all multicast groups (not using ACL) for the static RP. But a static RP can be configured only once.
- If there are more than one static RP in a multicast group, the one of the highest IPv6 address is used.
- Only the addresses permitted by ACL are valid multicast groups. By default, all the multicast groups 224/4 are permitted.
- After configuration is performed, the static RP's source IPv6 address is inserted to the group range-based static RP group tree structure. Each group range-based static multicast group maintains the chain list structure of a static RP group. This chain list is sorted in descending order of IPv6 address. When you select a RP from a static RP group, the first entry, namely the one with the largest IPv6 address, will be selected first.

Deleting a static IPv6 address also deletes this address from all the existing static RP groups and selects one from in the existing RP group tree structure as the RP address.

Configuration Examples The following example configures the RP static address.

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim rp-address 3333::3333 acl
Ruijie(config)# ipv6 pim rp-address 210.34.0.55 4
Ruijie(config)# ipv6 access-list ac
```

```
Ruijie(config)# permit ipv6 any ff66::6666/64
```

Related Commands

Command	Description
ipv6 access-list	N/A

Platform Description N/A

7.26 ipv6 pim rp-candidate

Use this command to configure the C-RP. Use the **no** or **default** form of this command to restore the default setting.

ipv6 pim rp-candidate *interface-type interface-number* [**priority** *priority-value*] [**interval** *interval-seconds*] [**group-list** *ipv6_access-list*]

no ipv6 pim rp-candidate [*interface-type interface-number*]

default ipv6 pim rp-candidate [*interface-type interface-number*]

Parameter Description

Parameter	Description
interface-type interface-number	Interface type and interface number
priority-value	(Optional) Priority in the range from 0 to 255, 192 by default
interval-seconds	(Optional) Interval in the range from 0 to 16383 in the unit of seconds, 60 by default
ipv6_access_list	(Optional) ACL name. By default, all multicast groups are permitted.

Defaults N/A

Command Mode Global configuration mode

Usage Guide In the PIM-SMv6 protocol, the shared tree RPT created by the multicast routing uses the Rendezvous Point (RP) as the root node. RP is elected by the candidate RPs. After BSR is elected, all C-RPs sends C-RP messages in the unicast form to BSR regularly, and BSR spreads the messages throughout the PIM domain.

To specify an interface as the candidate RP of a specific group, execute this command with ACL. Note that the group range is calculated only based on the permit rule, not the deny rule.

Configuration Examples The following example configures the RP candidate.

```
Ruijie# configure terminal
```

```
Ruijie(config)# ipv6 pim rp-candidate g 0/3 priority 200 group-list acl interval
40
Ruijie(config)# ipv6 access-list acl
Ruijie(config-ipv6-acl)# permit ipv6  any ff66::6666/64
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.27 ipv6 pim rp embedded

Use this command to enable the embedded RP function. Use the **no** or **default** form of this command to disable this function.

ipv6 pim rp embedded [**group-list** *ipv6_acl_name*]

no ipv6 pim rp embedded

default ipv6 pim rp embedded

Parameter Description

Parameter	Description
group-list ipv6_acl_name	Enables embedded RP for the IPv6 multicast address of specified embedded RP address.

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide This command is used to enable the embedded RP function explicitly and to enable the embedded RP for the IPv6 multicast address of specified embedded RP address.

Configuration Examples The following example enables the embedded RP for the IPv6 multicast addresses of all embedded RP addresses.

```
Ruijie(config)# ipv6 pim rp embedded
```

Related Commands

Command	Description
ipv6 access-list	N/A

Platform Description N/A

7.28 ipv6 pim rp-register-kat

Use this command to set the survival time of (S, G) entry created by the register packet on the RP. Use the **no** or **default** form of this command to restore the default setting.

ipv6 pim rp-register-kat *seconds*

no ipv6 pim rp-register-kat

default ipv6 pim rp-register-kat

Parameter Description

Parameter	Description
seconds	KAT timer time in the range from1 to 65525 in the unit of seconds.

Defaults The default is equal to the sum of register probe time and three times register suppression time.

Command Mode Global configuration mode

Usage Guide This command is used to configure the KAT interval of RP.

Configuration Examples The following example configures the KAT interval of RP.

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim rp-register-kat 250
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.29 ipv6 pim sparse-mode

Use this command to enable PIM-SMv6 on the interface. Use the **no** or **default** form of this command to restore the default setting.

ipv6 pim sparse-mode

no ipv6 pim sparse-mode

default ipv6 pim sparse-mode

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide This command is used to enable PIM-SMv6 on the interface.

- You need to enable multicast routing forwarding in the global configuration mode before enabling PIM-SMv6. Otherwise, multicast packets cannot be forwarded even though you enable PIM-SM.
- During the execution of this command, if the prompt "Failed to enable PIM-SMv6 on <Interface Name>, resource temporarily unavailable, please try again" appears, re-execute this command.
- During the execution of this command, if the prompt "PIM-SMv6 Configure failed! VIF limit exceeded in NSM!!!" appears, it indicates the allowed configured interface number exceeds the upper limit of the multicast interfaces. In this case, if you still need to enable PIM-SMv6 on the interface, delete the unnecessary PIM-SMv6,or PIM-DMv6 interfaces.
- If the interface is of tunnel-type, only 6Over4 configuration tunnel, 6Over GRE tunnel, 6Over4 configuration tunnel and 6Over6 GRE tunnel support the IPv6 multicasting at the moment. The multicasting can also be enabled on other tunnel interfaces which do not support the multicasting, but no error message will be displayed and no multicast packets will be received and forwarded.
- The multicast tunnel can only be built on the Ethernet interface, the nested tunnel and the multicast data Qos/ACL are not supported.

Configuration Examples The following example enables PIM-SMv6 on the interface.

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ipv6 pim sparse-mode
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.30 ipv6 pim spt-threshold

Use this command to enable SPT switch. Use the **no** or **default** form of this command to restore the default setting.

ipv6 pim spt-threshold [**group-list** *ipv6_access-list*]

no ipv6 pim spt-threshold [**group-list** *ipv6_access-list*]

default ipv6 pim spt-threshold [**group-list** *ipv6_access-list*]

Parameter Description

Parameter	Description
ipv6_access_list	(Optional) supporting name ACL. By default, all multicast groups are permitted for SPT switching.

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide This command is used to enable the RP tree-to-SPT tree switching function in a specific multicast group range (using group-list) or all multicast groups (not using group-list) .

Configuration Examples The following example enables the SPT switch.

```
Ruijie(config)# ipv6 pim spt-threshold acl
Ruijie(config)# ipv6 access-list acl
Ruijie(config-ipv6-acl)# permit ipv6  fe80::2d0:f8ff:fe22:33ad /128
ff66::6666/64
```

Related Commands

Command	Description
ipv6 access-list	N/A

Platform Description N/A

7.31 ipv6 pim ssm

Use this command to enable SSM and set the SSM group address range. Use the **no** or **default** form of this command to restore the default setting.

ipv6 pim ssm { **default** | **range** *ipv6_access-list* }

no ipv6 pim ssm

default ipv6 pim ssm

Parameter Description

Parameter	Description
default	Group in the range of FF3x::/32
range *ipv6_access_list*	Supporting name ACL.

Defaults This function is disabled by default.

Command Global configuration mode

Mode

Usage Guide This command is used to enable PIM-SSMv6 (or in some specific multicast groups).

Configuration Examples The following example sets the source-specific multicast of the multicast group range acl.

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim ssm range acl
```

The following example uses SSM for the source address fe80::2d0:f8ff:fe22:33ad, group range of ff32::3333/64.

```
Ruijie(config-ipv6-acl)# permit ipv6  fe80::2d0:f8ff:fe22:33ad /128
ff32::3333/64
```

Related Commands

Command	Description
ipv6 access-list	N/A

Platform Description N/A

7.32 ipv6 pim static-rp-preferred

Use this command to configure a higher priority for static RP over the C-RP, Use the **no** or **default** form of this command to restore the default setting.

ipv6 pim static-rp-preferred

no ipv6 pim static-rp-preferred

default ipv6 pim static-rp-preferred

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, the priority of the RP elected through BSR mechanism is high than the one configured statically.

Command Mode Interface configuration mode

Usage Guide With this command configured, the priority of the static RP is higher than the one elected through the BSR mechanism.

Configuration Examples The following example configures the priority of the static RP is higher than the one elected through the BSR mechanism.

```
Ruijie# configure terminal
Ruijie(config-if)# ipv6 pim static-rp-preferred
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

7.33 ipv6 pim triggered-hello-delay

Use this command to configure Triggered-Hello-Delay time on the interface. Use the **no** or **default** form of this command to restore the default setting.

ipv6 pim triggered-hello-delay *seconds*

no ipv6 pim triggered-hello-delay

default ipv6 pim triggered-hello-delay

Parameter Description	Parameter	Description
	interval-seconds	In the range from1 to 5 in the unit of seconds.

Defaults The default is 5 seconds.

Command Mode Interface configuration mode

Usage Guide Use this command to configure the triggered-hello-delay of the interface. When the interface starts or detects a new neighbor, it uses the trigger-hello-delay to generate random time, and then the interface sends the Hello message at the random time.

Configuration Examples The following example sets the triggered-hello-delay to 3 seconds.

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ipv6 pim triggered-hello-delay 3
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

7.34 show debugging

Use this command to display the debugging status.

show debugging

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode/ Global configuration mode / Interface configuration mode

Usage Guide This command is used to turn on debugging switch.

Configuration Examples The following example displays the debugging status.

```
Ruijie # show debugging
PIM-SM Debugging status:
PIM packet debugging is on.
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.35 show ipv6 pim sparse-mode bsr-router

Use this command to display the BSR information.

show ipv6 pim sparse-mode bsr-router

Parameter Description

Parameter	Description
N/A	N/A

Defaults Privileged EXEC mode/ Global configuration mode / Interface configuration mode

Command Mode Privileged EXEC mode/ global configuration mode / interface configuration mode

Usage Guide This command is used to display BSR information.

Configuration Examples The following example displays BSR information.

```
Ruijie# show ipv6 pim sparse-mode bsr-router
PIMv2 Bootstrap information
This system is the Bootstrap Router (BSR)
BSR address: 3333::8888
Uptime:00:03:31, BSR Priority: 64, Hash mask length: 126
Next bootstrap message in 00:00:47
Role: Candidate BSR  Priority: 64, Hash mask length: 126
State: Elected BSR
Candidate RP: 3333::8888(GigabitEthernet 0/5)
Advertisement interval 60 seconds
Next Cand_RP_advertisement in 00:00:37
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.36 show ipv6 pim sparse-mode interface

Use this command to display PIM-SMv6 interface information.

show ipv6 pim sparse-mode interface [*interface-type interface-number* [**detail**]]

Parameter Description

Parameter	Description
interface-type interface-number	(Optional) Interface name. This command takes effect for all interfaces by default.
detail	(Optional) Displays the details of an interface.

Defaults N/A

Command Mode Privileged EXEC mode/ Global configuration mode / Interface configuration mode

Usage Guide This command displays the PIM-SMv6 information on the interface.

Configuration Examples The following example displays the PIM-SMv6 interface information.

```
Ruijie #show ipv6 pim sparse-mode interface detail
GigabitEthernet 0/5 (vif 1):
Address fe80::2d0:f8ff:fe22:33ad, DR fe80::2d0:f8ff:fe22:34b3
```

```
Hello period 30 seconds, Next Hello in 6 seconds
Triggered Hello period 5 seconds
Secondary addresses:
  3333::8888
  4444::4444
 Neighbors:
  fe80::2d0:f8ff:fe22:34b3
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.37 show ipv6 pim sparse-mode local-members

Use this command to display the local MLD information on the PIM-SMv6 interface.

show ipv6 pim sparse-mode local-members [*interface-type interface-number*]

Parameter Description

Parameter	Description
interface-type interface-number	(Optional) Interface name. This command takes effect for all interfaces by default.

Defaults N/A

Command Mode Privileged EXEC mode/ global configuration mode / interface configuration mode

Usage Guide This command displays the local MLD information on the PIM-SMv6-enabled interface.

Configuration Examples The following example displays the local MLD information on the PIM-SMv6 interface.

```
Ruijie (config-if)#show ipv6 pim sparse-mode local-members
PIM Local membership information
GigabitEthernet 0/5:
  (*, ff66::6666) : Include
```

Related Commands

Command	Description
N/A	N/A

Platform N/A

Description

7.38 show ipv6 pim sparse-mode mroute

Use this command to display the PIM-SMv6 routing information.

show ipv6 pim sparse-mode mroute [*group-or-source-address* [*group-or-source-address*]]

Parameter Description

Parameter	Description
group-or-source-address	Group address or source address. Two addresses cannot both be the group addresses or the source addresses.

Defaults N/A

Command Mode Privileged EXEC mode/ Global configuration mode / Interface configuration mode

Usage Guide This command is used to display route information. Only one group IPv6 address, one source IPv6 address or one group IPv6 address-source IPv6 address pair can be configured at a time. You can also specify no group IP address or source IPv6 address.

Configuration Examples N/A

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.39 show ipv6 pim sparse-mode neighbor

Use this command to display the neighbor information.

show ipv6 pim sparse-mode neighbor [**detail**]

Parameter Description

Parameter	Description
detail	(Optional) Displays the details of an interface.

Defaults N/A

Command Privileged EXEC mode/ Global configuration mode / Interface configuration mode

Mode

Usage Guide This command displays the information on neighbors.

Configuration Examples The following example displays the neighbor information..

```
Ruijie# show ipv6 pim sparse-mode neighbor detail
Nbr fe80::2d0:f8ff:fe22:34b3 (GigabitEthernet 0/5)
 Expires in 86 seconds
  Secondary addresses:
   6666::6666
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.40 show ipv6 pim sparse-mode nexthop

Use this command to display the next hop information, including the interface ID, address and metric.
show ipv6 pim sparse-mode nexthop

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode/ Global configuration mode / Interface configuration mode

Usage Guide This command displays the information on the next hop, including interface number, IP address and metric.

Configuration Examples N/A

Related Commands

Command	Description
N/A	N/A

Platform N/A

Description

7.41 show ipv6 pim sparse-mode rp-hash

Use this command to display the RP information corresponding to the group address.

show ipv6 pim sparse-mode rp-hash *ipv6-group-address*

Parameter Description

Parameter	Description
ipv6_group-address	IPv6 group address

Defaults N/A

Command Mode Privileged EXEC mode/ Global configuration mode / Interface configuration mode

Usage Guide This command displays the information on the RP of the specific group IPv6 address.

Configuration Examples The following example displays the RP information corresponding to the group address..

```
Ruijie# show ipv6 pim sparse-mode rp-hash ff66::6666
RP: 3333::8888
Info source: 3333::8888, via bootstrap
PIMv2 Hash Value 126
RP 3333::8888, via bootstrap, priority 192, hash value 1468234650
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.42 show ipv6 pim sparse-mode rp mapping

Use this command to display the information on all RPs and the multicast groups they serve.

show ipv6 pim sparse-mode rp mapping

Parameter Description

Parameter	Description
mapping	All groups and RP information.

Defaults N/A

Command Mode Privileged EXEC mode/ Global configuration mode / Interface configuration mode

Usage Guide This command displays the information on all RPs and the multicast groups they serve.

Configuration Examples The following example displays the information on all RPs and the multicast groups they serve.

```
Ruijie# show ipv6 pim sparse-mode rp mapping
PIM Group-to-RP Mappings
This system is the Bootstrap Router (v2)
Group(s): ff00::/8
  RP: 3333::1
    Info source: 3333::1, via bootstrap, priority 192
        Uptime: 00:12:40, expires: 00:01:50
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.43 show ipv6 pim sparse-mode track

Use this command to display the number of sent and received PIM packets during the period from the beginning of the statistics till now.

show ipv6 pim sparse-mode track

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode/ global configuration mode / interface configuration mode

Usage Guide This command is used to display the number of sent and received PIM packets during the period from the beginning of the statistics till now.. When the system starts up, it sets the start time of the statistics. The start time of the statistics is reconfigured and the PIMv6 packet counter is cleared on calling the clear ipv6 pim sparse-mode track every time.

Configuration Examples The following example displays the number of sent and received PIM packets during the period from the beginning of the statistics till now.

```
Ruijie# show ipv6 pim sparse-mode track
```

```
PIMv6 packet counters track
Elapsed time since counters cleared: 00:04:03
                           received        sent
Valid PIMSMv6 packets:     0               8
Hello:                     0               8
Join-Prune:                0               0
Register:                  0               0
Register-Stop:             0               0
Assert:                    0               0
BSM:                       0               0
C-RP-ADV:                  0               0
PIMDMv6-Graft:             0
PIMDMv6-Graft-Ack:         0
PIMDMv6-State-Refresh:     0
Unknown PIMv6 Type:        0
Errors:
Malformed packets:                         0
Bad checksums:                                    0
Send errors:                                          0
Packets received with unknown PIMv6 version:   0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

8 MSDP Commands

8.1 clear ip msdp peer

Use this command to clear specific MSDP peer. This will clear the connection to the MSDP peer and then reestablish the connection to MDSP peer. The statistics of MSDP peer will be cleared at the same time.

clear ip msdp peer *peer-address*

Parameter Description

Parameter	Description
peer-address	IP address of MSDP peer

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to clear the TCP connection to the specified MSDP peer and clear all the MSDP peer statistics.

Configuration Examples The following example clears MDSP peer of 218.14.5.23.

```
Ruijie# clear ip msdp peer 218.14.5.23
```

Related Commands

Command	Description
N/A	N/A

Platform Description This command is supported only on L3 devices.

8.2 clear ip msdp sa-cache

Use this command to clear SA cache entries.

clear ip msdp sa-cache [*group-address*]

Parameter Description

Parameter	Description
group-address	Group address. If the multicast group address is not specified, all SA cache entries will be cleared; if the multicast group address is specified, the SA cache entries of this multicast group will be cleared.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Use this command to clear the SA cache entries learned from MSDP peer. If no multicast group address is specified, all SA cache entries will be cleared.
After SA cache entries are cleared, the MSDP device will need to relearn SA messages.

Configuration Examples The following example clears the SA cache entries with the multicast group 224.1.1.1.

```
Ruijie# clear ip msdp sa-cache 224.1.1.1
```

Related Commands

Command	Description
N/A	N/A

Platform Description This command is supported only on L3 devices.

8.3 clear ip msdp statistics

Use this command to clear the statistics of MSDP peers without resetting the TCP sessions.
clear ip msdp statistics [*peer-address*]

Parameter Description

Parameter	Description
peer-address	IP address of MSDP peer whose statistics counters, reset count, and input/output count will be cleared.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Use this command to clear the statistics of MSDP peers and view the new statistics of MSDP peers. This command can clear the statistics of one or more MDSP peers without resetting the MSDP peer.

Configuration Examples The following example clears the statistics of the MSDP peer with IP address being 61.83.1.52.

```
Ruijie# clear ip msdp statistics 61.83.1.52
```

Related Commands

Command	Description

N/A	N/A

Platform Description This command is supported only on L3 devices.

8.4 ip msdp default-peer

Use this command to define a default MSDP peer.
Use **no** or **default** form of this command to restore the default setting.
ip msdp default-peer *peer-address* [**prefix-list** *prefix-list-name*]
no ip msdp default-peer *peer-address*
default ip msdp default-peer *peer-address*

Parameter Description

Parameter	Description
peer-address	IP address of MSDP peer
prefix-list *prefix-list-name*	Specifies the BGP prefix list.

Defaults By default, no default MSDP peer is configured.

Command Mode Global configuration mode

Usage Guide The RPF-Peer calculation rule for the specified RP address may leads the loss of RPF-Peer information, which causes that the SA messages are dropped directly without the Peer-RPF check. With a default peer configured, the SA messages are ensured to pass the Peer-RFP check, so that the local host could accept the SA messages to learn the multicast source information carried by the SA messages.
If "prefix-list prefix-list-name" is not specified, all SA messages from the default MSDP peer will be accepted.
If "prefix-list prefix-list-name" is specified, only the SA messages from the RP specified by prefix-list prefix-list-name will be accepted.
If "prefix-list prefix-list-name" is specified but the prefix list is not configured, all SA messages from this default MSDP peer will be accepted.

Configuration Examples The following example configures 172.16.33.1 as the default peer.

```
Ruijie(config)# ip msdp peer 172.16.33.1
Ruijie(config)# ip msdp peer 172.16.34.2
Ruijie(config)# ip msdp default-peer 172.16.33.1
```

Related Commands

Command	Description
ip msdp peer	Creates MSDP peer.

Platform Description This command is supported only on layer-3 device.

8.5 ip msdp description

Use this command to add descriptive information for MSDP peer.
Use **no** or **default** form of this command to restore the default setting.
ip msdp description *peer-address text*
no ip msdp description *peer-address*
default ip msdp description *peer-address*

Parameter Description

Parameter	Description
peer-address	IP address of MSDP peer
text	Descriptive information for MSDP peer

Defaults No descriptive information is configured for MSDP peer.

Command Mode Global configuration mode

Usage Guide The administrator can configure descriptive information for MSDP peers in order to identify them conveniently.
If the descriptive information A is specified for an MSDP peer, A is displayed. If no descriptive information is specified, “No description” is displayed.

Configuration Examples The following example configures the descriptive information for peer 172.17.1.2 as "customer-a".

```
Ruijie(config)# ip msdp description 172.171.1.2 customer-a
```

Related Commands

Command	Description
show ip msdp peer	Displays the descriptive information for MSDP peer.

Platform Description This command is supported only on L3 devices.

8.6 ip msdp filter-sa-request

Use this command to filter the SA request messages sent from MSDP peer.

Use the **no** or **default** form of this command to restore the default setting.

ip msdp filter-sa-request *peer-address* [**list** *access-list*]
no ip msdp filter-sa-request *peer-address*
default ip msdp filter-sa-request *peer-address*

Parameter Description

Parameter	Description
peer-address	IP address of MSDP peer
list access-list	The standard IP access list number or name for limiting multicast group addresses

Defaults All SA request messages from MSDP peer will be accepted and replied.

Command Mode Global configuration mode

Usage Guide Use this command to control which SA request messages will be accepted and replied.
If no access list is specified, all SA request messages will be ignored. If the access list is specified, only the SA request messages from the multicast group permitted by the access list will be accepted, and other messages will be ignored.

Configuration Examples The following example configures to filter SA request messages from peer 172.16.223.1 and only accept SA request messages with group address falling within 224.0.1.0-224.0.1.255.

```
Ruijie(config)# ip msdp filter-sa-request 172.16.223.1 list 1
Ruijie(config)# access-list 1 permit 224.0.1.1 0.0.0.255
```

Related Commands

Command	Description
ip msdp peer	Creates MSDP peer.

Platform Description This command is supported only on L3 devices.

8.7 ip msdp mesh-group

Use this command to configure a MSDP peer to be a member of a mesh group.
Use the **no** form of this command to remove the configuration.
Use the **default** form of this command to restore the default settings.
ip msdp mesh-group *mesh-name peer-address*
no ip msdp mesh-group *mesh-name peer-address*
default ip msdp mesh-group *mesh-name peer-address*

Parameter Description

Parameter	Description

mesh-name	Name of mesh group, case sensitive
peer-address	IP address of MSDP peer to be a member of mesh group.

Defaults No mesh group will be created, and MSDP peers do not belong to any mesh group.

Command Mode Global configuration mode

Usage Guide All MSDP peers in the mesh group shall be fully meshed, namely MSDP peer relationship has been established between every two members in the mesh group.
The SA received by one member of the mesh group won't be forwarded to other members in the same mesh group, thus reducing SA flooding and simplify Peer-RPF forwarding.

Configuration Examples The following example configures MSDP peer at address 192.168.1.3 to be a member of the mesh group named "msdp-mesh".

```
Ruijie(config)# ip msdp mesh-group msdp-mesh 192.168.1.3
```

Related Commands

Command	Description
show ip msdp mesh-group	Displays the information of mesh group.

Platform Description This command is supported only on L3 devices.

8.8 ip msdp originator-id

Use this command to allow a speaker that originates a SA message to use the IP address of the interface as the originator address in the SA message.
Use the **no** form of this command to remove this configuration.
Use the **default** form of this command to restore the default setting.
ip msdp originator-id *interface-type interface-number*
no ip msdp originator-id
default ip msdp originator-id

Parameter Description

Parameter	Description
interface-type	Interface type and interface number
interface-number	The master IP address of this interface will be used as the originator address in the SA messages. If no IP address is configured for this interface, or the interface is shut down, then the originator address in the SA messages won't use the master IP address of this interface, but use the RP address configured by PIM.

Defaults By default, the originator address in SA messages will be the RP address configured by PIM.

Command Mode Global configuration mode

Usage Guide Under certain circumstances, you may expect to change the originator address in SA messages, such as during Anycast-RP deployment. By this time, you can use this command to modify the originator address in SA messages.

Configuration Examples The following example uses the IP address of Loopback0 as the RP address in SA messages.

```
Ruijie(config)# ip msdp originator-id loopback0
```

Related Commands

Command	Description
N/A	N/A

Platform Description This command is supported only on L3 devices.

8.9 ip msdp password

Use this command to enable MD5 encryption of the TCP connection between MSDP peers.
Use the **no** or **default** form of this command to restore the default setting.
ip msdp password peer *peer-address* [*encryption-type*] *string*
no ip msdp password peer *peer-address*
default ip msdp password peer *peer-address*

Parameter Description

Parameter	Description
peer-address	IP address of MSDP peer
encryption-type	Grade of password: 0 (lowest level)-7 (highest level). Currently, only 0 and 7 are supported. The default encryption type is 0.
string	The password used for TCP MD5 authentication. Range: up to 80 characters when the encryption type is 0; up to 160 characters when the encryption type is 7.

Defaults MD5 encryption of the TCP connection between MSDP peers is not enabled.

Command Mode Global configuration mode

Usage Guide When it is needed to authenticate the MSDP peers, you can enable MD5 encryption of TCP

connection between MSDP peers. In such a case, two interconnected MSDP peers must be configured with MD5 authentication with same password, or else the connection will fail.
If the password is configured or changed, the local MSDP device won't terminate the current session, but will try to use the new password to maintain the current session until timeout.
If you have configure the password locally for the MSDP peer but no password is configured on MSDP, the following warning message will be displayed on the console:
%TCP-6-BADAUTH: MD5 digest NOT expected but found (200.200.200.6, 39996)->(200.200.200.16, 639)
If different MD5 passwords are configured between MSDP peers, the following warning message will be displayed on the console:
%TCP-6-BADAUTH: MD5 digest failed for (200.200.200.6, 12302)->(200.200.200.16, 639)

If the encryption type is 7, the entered encryption key must be even and not less than 4.

Configuration Examples

The following example configures the MD5 password of "test" for the MSDP peer of 10.32.43.144.

```
Ruijie(config)# ip msdp password peer 10.32.43.144 0 test
```

Related Commands

Command	Description
N/A	N/A

Platform Description

This command is supported only on L3 devices.

8.10 ip msdp peer connect-source

Use this command to create MSDP peer.
Use **no** or **default** form of this command to remove MSDP peer.
ip msdp peer *peer-address* **connect-source** *interface-type interface-number*
no ip msdp peer *peer-address*
default ip msdp peer *peer-address*

Parameter Description

Parameter	Description
peer-address	IP address of MSDP peer
connect-source interface-type interface-number	Interface type and interface number. The local MSDP device uses the main address of this interface as the source IP for the TCP connection to the remote MSDP peer. Loopback interface is recommended. If no IP address is configured for this interface, or the interface is shut down, then MSDP peer relation cannot be established.

Defaults

No MSDP peer is created.

Command Mode Global configuration mode

Usage Guide To enable MSDP, MSDP peer must be created.

Configuration Examples The following example configures the main address of interface loopback 0 as the source address for establishing MSDP peer relation with 192.168.5.1.

```
Ruijie(config)# ip msdp peer 192.168.5.1 connect-source loopback 0
```

Related Commands

Command	Description
show ip msdp peer	Displays the information about MSDP peer.

Platform Description This command is supported only on L3 devices.

8.11 ip msdp redistribute

Use this command to configure which (S, G) entries from the multicast routing table can be advertised to MSDP peers.
Use the **no** form of this command to remove this configuration.
Use the **default** form of this command to restore the default settings.
ip msdp redistribute [**list** *access-list-name*] [**route-map** *route-map-name*]
no ip msdp redistribute
default ip msdp redistribute

Parameter Description

Parameter	Description
list access-list-name	Number or name of an extended IP access list that controls which multicast routes (S, G) can be advertised.
route-map route-map-name	Defines route-map.

Defaults All multicast sources (S, G) registered on the local RP will be advertised.

Command Mode Global configuration mode

Usage Guide After redistribution filtering is configured, the (S, G) information from the local AS or the other AS can be added to the MSDP only through redistribution filtering.
If "**list** *access-list-name*" is specified, only those matched multicast routes (S, G) will be advertised.
If "**route-map** *map-name"* is specified, only multicast routes (S, G) matching the criteria given in

"map-name" will be advertised.
If two keywords are specified, then multicast routes (S, G) matching all conditions will be advertised.
If the "**ip msdp redistribute**" command is configured with no keywords, no multicast sources will be advertised.

Configuration Examples The following example configures to only advertise multicast routes with multicast source being 200.200.200.0/24 and group address being 225.1.1.0/24.

```
Router(config)# ip msdp redistribute list 100
Router(config)# ip access-list extended 100
Router(config-ext-nacl)# permit ip 200.200.200.0 0.0.0.255 225.1.1.0 0.0.0.255
```

Related Commands

Command	Description
ip msdp sa-filter in	Configures the incoming filter for SA messages.
ip msdp sa-filter out	Configures the outgoing filter for SA messages.

Platform Description This command is supported only on L3 devices.

8.12 ip msdp sa-filter in

Use this command to configure an incoming filter for SA messages.
Use the **no** or **default** form of this command to remove the incoming filter.
ip msdp sa-filter in *peer-address* [**list** *access-list-name*] [**route–map** *route-map-name*] [**rp-list** *rp-access-list-name*] [**rp-route-map** *rp-route-map-name*]
no ip msdp sa-filter in *peer-address*
default ip msdp sa-filter in *peer-address*

Parameter Description

Parameter	Description
peer-address	IP address of MSDP peer
list access-list-name	Number or name of an extended IP access list that controls which multicast routes (S, G) can be received.
route-map route-map-name	Specify the name of route-map; only SA messages matching the criteria given in "map-name" can pass through.
rp-list rp-access-list-name	Number or name of standard access list that controls RPs.
rp-route-map rp-route-map-name	Specify the name of route map for RP; only the SA messages matching rp-map-name can be accepted.

Defaults All incoming SA messages will be accepted without filtering.

Command Global configuration mode

Mode

Usage Guide If the command is configured, but no access list or route map is specified, all incoming SA messages will be filtered.
If only the **list** keyword or the **route-map** keyword is used, the multicast source (S, G) in SA messages matching the criteria corresponding to this keyword will be accepted.
If only the **rp-list** keyword or the **rp-route-map** keyword is used, the SA message will be accepted if the RP address carried in SA message matches the criteria corresponding to this keyword.
If two or more keywords of **list, route-map, rp-list** and **rp-route-map** are used, the SA message will be accepted if any multicast source (S, G) in SA message meet the criteria corresponding to all keywords.

Configuration Examples The following example configures that all SA messages from the peer of 10.234.1.43 will be filtered.

```
Ruijie(config)# ip msdp peer 10.234.1.43
Ruijie(config)# ip msdp sa-filter in 10.234.1.43
```

Related Commands

Command	Description
ip msdp peer	Configures MSDP peer.
ip msdp sa-filter-out	Configures the outgoing filter for SA messages received from MSDP peers.

Platform Description This command is supported only on L3 devices.

8.13 ip msdp sa-filter out

Use this command to configure an outgoing filter for SA messages.
Use the **no** or **default** form of this command to remove the outgoing filter.
ip msdp sa-filter out *peer-address* [**list** *access-list-name*] [**route–map** *route-map-name*] [**rp-list** *rp-access-list-name*] [**rp-route-map** *rp-route-map-name*]
no ip msdp sa-filter out *peer-address*
default ip msdp sa-filter out *peer-address*

Parameter Description

Parameter	Description
peer-address	IP address of MSDP peer
list access-list-name	Number or name of an extended IP access list that controls which multicast routes (S, G) can be received.
route-map route-map-name	Specify the name of route-map; only SA messages matching the criteria given in "map-name" can pass through.
rp-list rp-access-list-name	Number or name of standard access list that controls RPs.
rp-route-map	Specify the name of route map for RP; only the SA messages

rp-route-map-name	matching rp-map-name can be accepted.

Defaults The outgoing SA messages won't be filtered. All SA messages received will be forwarded to the MSDP peer.

Command Mode Global configuration mode

Usage Guide If the command is configured, but no access list or route map is specified, all SA messages won't be forwarded to this MSDP peer.
If only one keyword of **list, route-map, rp-list** and **rp-route-map** is used, the multicast source pair (S, G) will be forwarded to this MSDP peer if the criteria corresponding to this keyword are met.
If two or more keywords of **list, route-map, rp-list** and **rp-route-map** are used, the (S, G) pair will only be forwarded to this MSDP peer if criteria corresponding to all keywords are met.

Configuration Examples The following example allows only multicast sources that pass access list 100 to be forwarded to the peer of 10.234.1.43.

```
Ruijie(config)# ip msdp peer 10.234.1.43
Ruijie(config)# ip msdp sa-filter out 10.234.1.43 list 100
Ruijie(config)# access 100 permit ip 10.211.0.0 0.0.255.255 224.12.0.0
0.0.255.255
```

Related Commands

Command	Description
ip msdp peer	Configures MSDP peer.
ip msdp sa-filter-in	Configures the incoming filter for SA messages received from MSDP peers.

Platform Description This command is supported only on L3 devices.

8.14 ip msdp sa-limit

Use this command to configure the allowable maximum number of SA cache entries from a MSDP peer.
Use the **no** or **default** form of this command to restore the default settings.
ip msdp sa-limit *peer-address sa-limit*
no ip msdp sa-limit *peer-address*
default ip msdp sa-limit *peer-address*

Parameter Description

Parameter	Description
peer-address	IP address of MSDP peer

sa-limit	Maximum number of SA messages from an MSDP peer allowed in the SA cache.

Defaults The maximum number of SA messages from an MSDP peer allowed in the SA cache is not limited.

Command Mode Global configuration mode

Usage Guide It is suggested to configure this command on all MSDP peers to prevent SA flooding attacks from MSDP peers

Configuration Examples The following example configures the SA message limit to 100 for the MSDP peer with IP address being 172.16.3.1.

```
Ruijie(config)# ip msdp sa-limit 172.16.3.1 100
```

Related Commands

Command	Description
N/A	N/A

Platform Description This command is supported only on L3 devices.

8.15 ip msdp shutdown

Use this command to shut down the connection to MSDP peer.
Use the **no** or **default** form of this command to restore the default settings.
ip msdp shutdown *peer-address*
no ip msdp shutdown *peer-address*
default ip msdp shutdown *peer-address*

Parameter Description

Parameter	Description
peer-address	IP address of MSDP peer

Defaults The connection to peer is not shut down.

Command Mode Global configuration mode

Usage Guide Only the TCP connection to the specified MSDP peer will be shut down. Neither the MSDP peer nor its configurations will be cleared.

Configuration Examples The following example shuts down the MSDP peer at IP address 192.168.7.20.

```
Ruijie(config)# ip msdp shutdown 192.168.7.20
```

Related Commands	Command	Description
	ip msdp peer	Creates MSDP peer.

Platform Description This command is supported only on L3 devices.

8.16 ip msdp timer

Use this command to configure the interval for timer re-connection.
Use the **no** or **default** form of this command to restore the default settings.
ip msdp timer *interval*
no ip msdp time
default ip msdp timer

Parameter Description	Parameter	Description
	interval	Interval for timer re-connection, within the range from 1 to 60 (in second)

Defaults The default interval is 30 seconds.

Command Mode Global configuration mode

Usage Guide By default, the interval for timer re-connection is 30 seconds, that is, the peer in active end can initiate only one TCP connection within 30 seconds. In certain applications, the interval is expected to be decreased in order to accelerate convergence of MSDP peering relation.

Configuration Examples The following example sets the interval for timer re-connection to 20 seconds.

```
Ruijie(config)# ip msdp timer 20
```

Related Commands	Command	Description
	N/A	N/A

Platform Description This command is supported only on L3 devices.

8.17 ip msdp ttl-threshold

Use this command to limit the TTL value of multicast data packets carried in SA messages in order to

limit the transmission of multicast packets.

Use the **no** or **default** form of this command to restore to the default settings.

ip msdp ttl-threshold *peer-address ttl-value*

no ip msdp ttl-threshold *peer-address*

default ip msdp ttl-threshold *peer-address*

Parameter Description

Parameter	Description
peer-address	IP address of MSDP peer
ttl-value	TTL value (0-255)

Defaults TTL threshold is 0 by default.

Command Mode Global configuration mode

Usage Guide This command limits multicast data packets which are sent in data-encapsulated SA messages. Only multicast packets with an IP-header TTL greater than or equal to the ttl-value will be sent to the MSDP peer. If the TTL value of multicast data is less than the threshold configured, then the multicast data will be separated from SA messages and discarded, and the SA messages without multicast data will be sent to the MSDP peer.

This command only limits the transmission of multicast data in SA messages without compromising the transmission of multicast sources in SA messages

Configuration Examples The following example configures the TTL threshold for peer at IP address 192.168.10.1 to 8 hops:

```
Ruijie(config)# ip msdp ttl-threshold 192.168.10.1 8
```

Related Commands

Command	Description
N/A	N/A

Platform Description This command is supported only on L3 devices.

8.18 ip msdp peer-limit

Use this command to set the upper limit of MSDP peers.

Use the **no** form of this command to remove the configuration.

Use the **default** form of this command to restore the default settings.

ip msdp peer-limit *peer-limit*

no ip msdp peer-limit

default ip msdp peer-limit

Parameter Description	Parameter	Description
	peer-limit	The upper limit of MSDP peers, in the range from 1 to128.

Defaults The default is 64.

Command Mode Global configuration mode

Usage Guide This command is used to set the upper limit of MSDP peers. If the number of existing MSDP peers exceeds the upper limit to be configured, you should delete some peers, or the configuration will fail.

Configuration Examples The following example sets the upper limit of MSDP peers to 128.

```
Ruijie(config)# ip msdp peer-limit 128
```

Platform Description This command is supported only on L3 devices.

8.19 ip msdp global-sa-limit

Use this command to configure the maximum SA cache.
Use the **no** form of this command to remove the configuration.
Use the **default** form of this command to restore the default settings.
ip msdp global-sa-limit *sa-limit*
no ip msdp global-sa-limit *sa-limit*
default ip msdp global-sa-limit *sa-limit*

Parameter Description	Parameter	Description
	sa-limit	The maximum SA cache, in the range from1 to 4,096

Defaults The default SA cache is 1,024.

Command Mode Global configuration mode

Usage Guide This command is used to set the maximum SA cache. It's recommended to configure it at the beginning of startup.
When MSDP is running, the increase in maximum SA cache has no influence upon the previously learned entries; the decrease in maximum SA cache will clear all entries learned before and start caching again.

Configuration Examples The following example sets the maximum SA cache to 4,096.

```
Ruijie(config)# ip msdp global-sa-limit 4096
```

Platform Description This command is supported only on L3 devices.

8.20 show ip msdp count

Use this command to display the number of sources and groups originated in SA messages and the number of SA messages from an MSDP peer in the SA cache.

show ip msdp count [*as-number*]

Parameter Description

Parameter	Description
as-number	Display the number of sources and groups originated in SA messages from the specified autonomous system number.

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide N/A

Configuration Examples

```
Ruijie# sh ip msdp count
SA State per Peer Counters, <Peer>: <# SA learned>
  1.1.1.2: 0
  100.100.100.14 : 0
  100.100.100.15 : 0
  100.100.100.200: 0
  200.200.200.2 : 2
  200.200.200.3 : 0
  200.200.200.6 : 0
  200.200.200.13 : 0
  200.200.200.66 : 0
SA State per ASN Counters, <asn>: <# sources>/<# groups>
Total entries: 2
100: 1/2   .
```

Field	Description
200.200.200.200:2	MSDP peer with IP address 200.200.200.200; 2 SA messages in the SA cache.

Total entries	Total number of SA entries in the SA cache.
?:1/2	Unknown autonomous system: 1 source address/2 multicast group addresses

Related Commands

Command	Description
N/A	N/A

Platform Description This command is supported only on L3 devices.

8.21 show ip msdp mesh-group

Use this command to display the information of mesh group.

show ip msdp mesh-group

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide N/A

Configuration Examples

```
Ruijie# sh ip msdp mesh-group
MSDP peers in each Mesh-group,<Mesh-group name>:<# peers>
msdp-mesh
  1.1.1.2
  1.1.1.3
```

Field	Description
msdp-mesh	Name of mesh group
1.1.1.2	One MSDP peer under this mesh group.

Related Commands

Command	Description
N/A	N/A

Platform Description This command is supported only on L3 devices.

8.22 show ip msdp peer

Use this command to display detailed information about the MSDP peer.

show ip msdp peer [*peer-address*]

Parameter Description

Parameter	Description
peer-address	IP address of MSDP peer

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide N/A

Configuration Examples

```
Ruijie#show ip msdp peer 20.0.0.1
MSDP PEER 20.0.0.1 (No description), AS unknown
  Connection status:
    State: Listen, Resets: 1, Connection source: GigabitEthernet 0/1 (20.0.0.2)
    Uptime(Downtime): 00:00:25, Message sent/received: 13/19
    Input messages discarded: 0
    Connection and counters cleared 00:13:25 ago
    Local Address of connection: 20.0.0.2
    MD5 signature protection on MSDP TCP connection: enabled
  SA Filtering:
    Input (S,G) Access-list filter: None
    Input (S,G) route-map filter: None
    Input RP Access-list filter: None
    Input RP Route-map filter: None
    Output (S,G) Access-list filter: None
    Output (S,G) Route-map filter: None
    Output RP Access-list filter: None
    Output RP Route-map filter: None
  SA-Requests:
    Input filter: None
  Peer ttl threshold: 0
  SAs learned from this peer: 2, SAs limit: No-limit
  Message counters:
    SA messages discarded: 0
    SA messages in/out: 13/0
    SA Requests discarded/in: 0/0
    SA Responses out: 0
```

```
Data Packets in/out: 6/0
```

Field	Description
MSDP Peer	IP address of MSDP peer.
AS	Autonomous system to which the MSDP peer belongs. If it is an unknown AS, “unknown” will be displayed.
State:	State of the MSDP peer.
Connection source:	Interface used to obtain the source address for TCP connection.
Uptime(Downtime):	Up time/down time of MSDP peer.
Messages sent/received:	Number of SA messages received.
SA Filtering:	SA filtering information.
SAs learned from this peer:	Number of SA entries learned from MSDP peer.
SAs limit:	SA message limit for this MSDP peer.

Related Commands

Command	Description
N/A	N/A

Platform Description This command is supported only on L3 devices.

8.23 show ip msdp rpf-peer

Use this command to show the information about MSDP RPF peer corresponding to the specified originator address.

show ip msdp rpf-peer *ip-address*

Parameter Description

Parameter	Description
ip-address	IP address of the originator of SA messages

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide Use this command to learn the Peer-RFP information about the originator.

Configuration Examples The following example displays the rpf-peer information of RP at address 1.1.1.1:

```
Ruijie# sh ip msdp rpf-peer 1.1.1.1
```

```
RPF peer information for 1.1.1.1
RPF peer: 200.200.200.2
RPF rule: Peer is only active peer
RPF route/mask: Not-used
RPF type: Not-used
```

Related Commands

Command	Description
N/A	N/A

Platform Description This command is only supported on L3 devices.

8.24 show ip msdp sa-cache

Use this command to display (S, G) state learned.

show ip msdp sa-cache [*group-address* | *source-address*] [*group-address* | *source-address*] [*as-number*]

Parameter Description

Parameter	Description
group-address | source -address	Group address or source address of the group or source about which (S, G) information is displayed.
as-number	Autonomous system number generated by SA messages.

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide N/A

Configuration Examples The following example displays (S, G) state learned.

```
Ruijie# sh ip msdp sa-cache
MSDP Source-Active Cache: 2 entries
 MSDP Source-Active Cache: 2 entries
  (200.200.200.200, 227.1.2.2), RP: 20.20.20.20, (M)BGP/AS 100,
04:17:09/00:02:05, Peer 200.200.200.2
    Learned from peer 200.200.200.2, RPF peer 200.200.200.2,
    SAs received: 277, Encapsulated data received: 0
  (200.200.200.200, 227.1.2.3), RP: 20.20.20.20, (M)BGP/AS 100,
04:17:09/00:02:05, Peer 200.200.200.2
    Learned from peer 200.200.200.2, RPF peer 200.200.200.2,
    SAs received: 277, Encapsulated data received: 0
```

Field	Description
(200.200.200.200, 227.1.2.2)	Source address and group address.
RP 20.20.20.20	RP address generating SA messages.
MBGP/AS	The autonomous system of the RP generating SA messages is unknown.
04:17:09/00:02:05	The route has been cached for 4 hours 17 minutes and 9 seconds. If no SA message is received in 2 minutes and 5 seconds, it will be removed from the SA cache.

Related Commands

Command	Description
N/A	N/A

Platform Description This command is only supported on L3 devices.

8.25 show ip msdp sa-originated

Use this command to display the (S, G) information to be sent by the local device. The (S, G) information has passed redistribution filtering.

show ip msdp sa-originated

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide This command can be used to display the (S, G) information sent by the local device that is the RP in PIM-SM with the multicast source (S, G) registered and is configured with MSDP peer.
(S, G) information displayed has passed redistribution filtering, but, whether the information can be sent to the MSDP peer requires the results of egress filtering for the information.

Configuration Examples The following is sample output of "show ip msdp sa-originated" command.

```
Ruijie# sh ip msdp sa-originated
MSDP Source-Active Originated: 5 entries
(192.168.23.78, 225.0.0.1), RP: 192.168.23.249
(192.168.23.79, 225.0.0.2), RP: 192.168.23.249
(192.168.23.80, 225.0.0.3), RP: 192.168.23.249
```

```
(192.168.23.81, 225.0.0.4), RP: 192.168.23.249
(192.168.23.82, 225.0.0.5), RP: 192.168.23.249
```

Field	Description
(192.168.23.78, 225.0.0.1)	The source address (the first IP address) and group address (the second IP address) of SA to be sent.
RP 192.168.23.249	RP address of SA sent.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

8.26 show ip msdp summary

Use this command to display the summary information about all MSDP peers.

show ip msdp summary

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide If the local device configured with MSDP peers is the PIM-SM Rendezvous Point (RP) and multicast sources (S,G) registers in the RP, the command will display: (S,G) to Send
The displayed (S,G) have gone through redistribution filtering (command: **ip msdp redistribute**). However, whether these (S,G) will be delivered to MSDP peers successfully relies on the outgoing filter (command: **ip msdp sa-filter out**).

Configuration Examples The following example displays the summary information about all MSDP peers.

```
Ruijie# sh ip msdp summary

Msdp Peer Status Summary
Peer Address      As      State     Uptime/Downtime    Reset-Count
Sa-Count    Peer-description
200.200.200.2     100     Up        04:22:11          10             6616
No description
200.200.200.3     100     Down      19:17:13          4              0
```

```
peer-A
```

Field	Description
Peer Address	IP address of MSDP peer
AS	Autonomous system to which the MSDP peer belongs
State	State of the MSDP peer
Uptime/Downtime	Up time or down time of MSDP peer

Related Commands

Command	Description
N/A	N/A

Platform Description This command is only supported on L3 devices.

9 IGMP Snooping Commands

9.1 clear ipv6 mld snooping gda-table

Use this command to clear the forwarding table information learned dynamically.

clear ipv mld snooping gda-table

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Use this command to clear the forwarding table information learned dynamically.

Configuration Examples The following example clears the forwarding table information learned dynamically:

```
Ruijie# clear ip mld snooping gda-table
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.2 clear ipv6 mld snooping statistics

Use this command to clear the MLD Snooping statistics, including the entry number, the entry volume, the number of various received packets, the group information and the interface information of the corresponding group.

clear ip mld snooping statistics

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Privileged EXEC mode

Mode

Usage Guide Use the **show ip mld snooping** command to verify the configuration.

Configuration Examples The following example clears the MLD Snooping statistics.

```
Ruijie# clear ip mld snooping statistics
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.3 deny

To deny the forwarding of the multicast streams in the range specified by the profile, execute the deny configuration command in the profile configuration mode.

Parameter Description N/A

Default The forwarding of the multicast streams in the range specified by the profile is denied.

Command Mode Profile configuration mode

Usage Guide First, configure the multicast range using the range command in the profile configuration mode. In addition, the profile must be applied to the interface in order to make the profile configuration take effect.

Configuration Examples The following is an example of deny the forwarding of the multicast stream 224.2.2.2:

```
Ruijie(config)# ip igmp profile 1
Ruijie(config-profile)# range 224.2.2.2
Ruijie(config-profile)# deny
```

Related Commands

Command	Description
ip igmp profile	Creates a profile.
range	Configures the multicast address range.

9.4 ip igmp profile

This is a mode navigation command. Use this command to select a profile and enter the IGMP profile configuration mode.

ip igmp profile *profile-number*
no ip igmp profile *profile-number*

Parameter Description	**Parameter**	**Description**
	profile-number	Profile number, in the range from 1 to 65535

Default N/A.

Command Mode Global configuration mode

Usage Guide The profile must be applied to the specified interface in order to make the profile take effect.

Configuration Examples The following is an example of creating a profile numbered 1 and entering the profile configuration mode.

```
Ruijie(config)# ip igmp profile 1
Ruijie(config-profile)#
```

Related Commands

Command	**Description**
range	Configures the multicast address range.

9.5 ip igmp snooping

Use this command to enable IVGL mode.
ip igmp snooping ivgl
Use this command to enable SVGL mode.
ip igmp snooping svgl
Use this command to enable IVGL-SVGL mode.
ip igmp snooping ivgl-svgl
Use the **no** form of this command to disable IGMP snooping.
no ip igmp snooping
default ip igmp snooping

Parameter Description N/A.

Default Disabled.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example demonstrates how to enable IGMP snooping and enter the IVGL mode:

```
Ruijie(config)# ip igmp snooping ivgl
```

9.6 ip igmp snooping dyn-mr-aging-time

To configure the aging time of the routing interface that the switch learns dynamically, execute the **ip igmp snooping dyn-mr-aging-time** command .

ip igmp snooping dyn-mr-aging-time *time*

no ip igmp snooping dyn-mr-aging-time

Parameter Description

Parameter	Description
time	Aging time of the routing interface that the switch learns dynamically

Defaults 300s.

Command Mode Global configuration mode.

Usage Guide When the dynamic routing interface learning function is enabled, this command sets the aging time of the routing interface. If the aging time is set too short, the routes may be added and deleted frequently.

Configuration Examples Set the aging time of the routing interface that the switch learns dynamically to 100 s:

```
Ruijie(config)# ip igmp snooping dyn-mr-aging-time 100
```

Related Commands

Command	Function
ip igmp snooping	Enables IGMP snooping.

9.7 ip igmp snooping fast-leave enable

To enable the fast leave function, execute the **ip igmp snooping fast-leave enable** command in the global configuration mode. The **no** form of this command is used to disable the function.

ip igmp snooping fast-leave enable

no ip igmp snooping fast-leave enable

Parameter Description

Parameter	Description
N/A	

Defaults Disabled.

Command Mode Global configuration mode

Usage Guide After you execute this command to enable the fast-leave function, the system will remove the corresponding multicast group on the corresponding interface upon the receipt of the IGMP leave message.
Subsequently, when the system receives a specific group query packet, the system does not forward it to the corresponding interface. Leave packets include IGMPv2 leave packets and IGMPv3 report packets of the include type without source addresses. The fast leave function applies to scenarios in which one interface is connected to only one host. This function saves bandwidth and resources.

Configuration Examples The following example enables the fast leave function on the switch:

```
Ruijie(config)# ip igmp snooping fast-leave
```

Related Commands

Command	Function
N/A	

9.8 ip igmp snooping filter

To configure a port to receive a specific set of multicast streams, execute the **ip igmp snooping filter** command in the interface configuration mode to associate the port to a specific profile. The **no** form of this command is used to delete the associated profile.

ip igmp snooping filter *profile-number*
no ip igmp snooping filter *profile-number*

Parameter Description

Parameter	Description
profile-number	Profile number

Default N/A.

Command Mode Global configuration mode or interface configuration mode.

Usage Guide A specific profile must be created before association.

Configuration Examples The following example demonstrates how to associate profile 1 to a megabit port 0/1:

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip igmp snooping filter 1
```

Related Commands

Command	Description
ip igmp profile	Create a profile.

9.9 ip igmp snooping host-aging-time

Use this command to configure the aging time of IGMP dynamic ports. The **no** form of this command is used to restore the default aging time.

ip igmp snooping host-aging-time *seconds*

no ip igmp snooping host-aging-time

Parameter Description	**Parameter**	**Description**
	seconds	Aging time. The unit is second. The value ranges from 1 to 65535. The default value is 260.

Defaults 260

Command Mode Global configuration mode

Usage guideline The aging time of a dynamic port is set by the system when the port receives an IGMP packet from the host for joining a certain IP multicast group.

When such an IGMP packet is received, the system resets the aging timer for the port. The duration of this timer is determined by **host-aging-time**. If the timer expires, the system determines that there is no host in this port for receiving multicast packets. The multicast device removes the port from the IGMP Snooping group. After the **ip igmp snooping host-aging-time** command is executed, the aging time will be determined by **host-aging-time**. This command takes effect only after the system receives the next IGMP packet. This command does not change the current aging time.

Example The following example sets the aging time to 30 seconds:

```
Ruijie(config)# ip igmp snooping host-aging-time 30
```

Related command	**Command**	**Description**
	-	-

Platform Description -

9.10 ip igmp snooping l2-entry-limit

Use this command to set the maximum number of multicast groups. The **no** form of this command is used to cancel the limit.

ip igmp snooping l2-entry-limit *number*

no ip igmp snooping l2-entry-limit

Parameter	**Parameter**	**Description**

Description		
	number	Number of multicast groups. The value ranges from 0 to 4096.

Defaults 1024

Command Mode Global configuration mode

Usage guideline The maximum number of multicast groups includes the multicast groups in all ports of all VLANs (including dynamic and static multicast groups). When the number of multicast groups reaches the limit, learning new group records and configuring new static multicast group ports are not allowed.

Example The following example sets the maximum number of multicast groups to 2000:

```
Ruijie(config)# ip igmp snooping l2-entry-limit 2000
```

Related command	Command	Description
	show ip igmp snooping	Displays the maximum number of multicast groups.

Platform Description N/A

9.11 ip igmp snooping limit-ipmc

To add a multicast source IP address check entry, execute the **ip igmp snooping limit-ipmc** command in the global configuration mode. The **no** form of this command is used to delete a source IP checklist entry.

ip igmp snooping limit-ipmc vlan *vid* **address** *gaddress* **server** *saddress*

no ip igmp snooping limit-ipmc vlan *vid* **address** *gaddress* **server** *saddress*

Parameter Description	Parameter	Description
	Vid	VLAN ID of the source IP address check entry
	Gaddress	Multicast address
	Saddress	Multicast source IP address (multicast server)

Defaults N/A

Command Mode Global configuration mode

Usage Guide The source IP address check function must be enabled before an entry can be added.

Configuration Examples

The following example adds an entry to the multicast source IP address check table.

```
Ruijie(config)# ip igmp snooping limit-ipmc vlan 1 address 224.0.0.1 server
192.168.4.243
```

Related Commands

Command	Description
ip igmp snooping source-check default-server	Configures a default source IP address while enabling the IP check function.

9.12 ip igmp snooping max-groups

To configure the maximum number of groups that can be added dynamically to this interface, execute the **ip igmp snooping max-groups** command in the interface configuration mode. The **no** form of this command is used to remove the configuration.

ip igmp snooping max-groups *number*

no ip igmp snooping max-groups

Parameter Description

Parameter	Description
number	The parameter ranges 0 to 4294967294.

Defaults N/A

Command Mode Interface configuration mode

Usage Guide If a maximum number of multicast groups are configured, the device will no longer receive and process IGMP Report messages when the number of multicast groups on this interface is beyond the range.

Configuration Examples

The following example configures the maximum number of multicast groups to 100 on the megabit interface 0/1:

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip igmp snooping max-group 100
```

Related Commands

Command	Description
ip igmp snooping filter	Filters multicast groups that pass through a port.

9.13 ip igmp snooping mrouter learn pim-dvmrp

To configure a device to listen to the IGMP Query/Dvmrp or PIM Help packets dynamically in order to automatically identify a routing interface, execute the **ip igmp snooping mrouter learn** command in the global configuration mode. The **no** form of this command is used to disable the dynamic learning.

ip igmp snooping mrouter learn pim-dvmrp

no ip igmp snooping mrouter learn pim-dvmrp

Defaults Enabled

Command Mode Global configuration mode

Usage Guide Routing interface is a port through which a multicast device (with IGMP Snooping enabled) is directly connected to a multicast neighbouring device (with multicast routing protocols enabled).
By default, the dynamic routing interface learning function is enabled. You can use the no form of this command to disable this function and clear all routing interfaces learnt dynamically. With dynamic routing interface learning function disabled globally, the function of all vlans will be disabled. Beside, with this function enabled globally, if the function of specified vlan is disabled, the dynamic routing interface learning function of the corresponding vlan is disabled. When the source port check function is enabled, only the multicast flow enters from the routing interface is legal and it is forwarded to the registered interface by the multicast equipment, the multicast flow from the non routing interface is considered to be the illegal and is discarded. With the source port check function enabled, the dynamic routing interface learning function will improve the application flexibility of IGMP snooping.

Configuration Examples The following example demonstrates how to enable the dynamic routing interface learning function on the equipment:
Ruijie(config)# ip igmp snooping mrouter learn pim-dvmrp

Related Commands

Command	Description
ip igmp snooping vlan mrouter learn pim-dvmrp	Enables the dynamic routing interface learning function on the multicast routing port.

9.14 ip igmp snooping preview

Allow the user to preview the specific multicast streams when the user doesn't have access to such multicast streams. Use **no** form of this command to disable multicast preview.
ip igmp snooping preview *profile-number*
no ip igmp snooping preview

Parameter Description

Parameter	Description
profile-number	Profile number (1-1024)

Defaults N/A

Command Mode Global configuration mode

Usage Guide

Apply the IGMP Profile to a multicast preview function. When the user doesn't have access to the multicast streams (namely the user might be filtered by IGMP Snooping filter), it can allow the user to preview partial contents. This function shall be used in conjunction with IGMP Snooping filter or multicast control in order to realize effective multicast preview.

Configuration Examples

The following example associates the profile 1 to the 100M port 0/1 and associates multicast preview with profile 2:

```
Ruijie(config)# ip igmp snooping preview 2
Ruijie(config-if)# int fa 0/1
Ruijie(config-if)# ip igmp snooping filter 1
```

Related Commands

Command	Description
ip igmp profile	Create a profile

Platform Description

This command is supported higher than V10.4 (3).

9.15 ip igmp snooping preview interval

Use this command to configure the interval that allows the user to preview the specific multicast streams when the user doesn't have access to such multicast streams. Use **no** form of this command to restore the preview interval to the default value.

ip igmp snooping preview interval *num*

no ip igmp snooping preview interval

Parameter Description

Parameter	Description
num	Preview interval (1-300); default: 60 seconds.

Defaults

The default value is 60 seconds.

Command Mode

Global configuration mode

Usage Guide

NA

Configuration Examples

The following example sets the multicast preview interval as 100 seconds on the 100M port of 0/1:

```
Ruijie(config)# ip igmp snooping preview interval 100
```

Related Commands

Command	Description
ip igmp snooping preview	Enables the multicast preview.

Platform Description N/A

9.16 ip igmp snooping querier

To enable the IGMP querier function, execute "**ip igmp snooping querier**" global configuration command. Use **no** form of this command to disable IGMP querier in all VLANs and disable the global configurations.

ip igmp snooping querier

no ip igmp snooping querier

Parameter Description

Parameter	Description
N/A	N/A

Defaults Disabled.

Command Mode Global configuration mode

Usage Guide After globally enabling the IGMP querier, you must enable the IGMP querier function in VLAN to affect this command.
If the IGMP querier function is disabled globally, the IGMP querier will be disabled in all VLANs.

Configuration Examples The following example enables the IGMP querier function on the device:

```
Ruijie(config)# ip igmp snooping querier
```

Related Commands

Command	Description
ip igmp snooping vlan querier	Enables the querier function in VLAN

Platform Description N/A

9.17 ip igmp snooping querier address

To enable the IGMP querier, you also need to specify a source IP address for query packets. Execute the global configuration command of "**ip igmp snooping querier address**". Use **no** form of this command to remove the source IP address configured.

ip igmp snooping querier address *a.b.c.d*

no ip igmp snooping querier address

Parameter

Parameter	Description

Description		
	a.b.c.d	Source IP address of the query packets.

Defaults No source IP address is specified.

Command Mode Global configuration mode.

Usage Guide After enabling IGMP querier, you also need to configure a source IP address for query packets, so that the device can send packets normally.
If no source IP address is specified in the VLAN needing to send packets, the device will verify whether the source IP address is specified globally. The device can only send query packets after finding the source IP configured, or else the querier function won't take effect.
If the IGMP querier source IP has been specified in VLAN, the source IP configured in the relevant VLAN will be used first.

Configuration Examples The following example specifies the source IP of query packets on the device:

```
Ruijie(config)# ip igmp snooping querier address 1.1.1.1
```

Related Commands	Command	Description
	ip igmp snooping vlan querier address	Enables the source IP check in VLAN

Platform Description N/A

9.18 ip igmp snooping querier max-response-time

To configure the maximum response time advertised in query packets, execute the global configuration command of "**ip igmp snooping querier max-response-time**". Use **no** form of this command to restore to the default value.
ip igmp snooping querier max-response-time *num*
no ip igmp snooping querier max-response-time

Parameter Description	Parameter	Description
	num	Maximum response time (1-25); unit: second; default: 10

Defaults N/A

Command Mode Global configuration mode

Usage Guide Configure this command to specify the maximum response time to query packets.
By default, the maximum response time is 10 seconds. If the maximum response time has been

specified in the corresponding VLAN, the value specified in VLAN will be used first.

Configuration Examples The following example specifies the maximum response time to query packets on the device:

```
Ruijie(config)# ip igmp snooping querier max-response-time 15
```

Related Commands

Command	Description
ip igmp snooping vlan querier *max-response-time*	Configures the maximum response time to query packets in VLAN

Platform Description N/A

9.19 ip igmp snooping querier query-interval

To specify the interval for IGMP querier to send query packets, execute the global configuration command of "**ip igmp snooping querier query-interval**". Use **no** form of this command to restore the query interval to the default value.

ip igmp snooping querier query-interval *num*

no ip igmp snooping querier query-interval

Parameter Description

Parameter	Description
num	Query interval (1-18000); unit: second; default: 60 seconds

Defaults N/A

Command Mode Global configuration mode

Usage Guide

After globally enabling IGMP querier, the timer will be enabled for sending query packets periodically. The aging time of the timer is the query interval. Configure this command to change the query interval.

If the query interval has been configured in the corresponding VLAN, the value specified in VLAN will be used first.

Configuration Examples The following example configures the query interval on the device:

```
Ruijie(config)# ip igmp snooping querier query-interval 100
```

Related Commands

Command	Description
ip igmp snooping vlan querier query-interval	Configures the query interval in VLAN

Platform Description N/A

9.20 ip igmp snooping querier timer expiry

To specify the expiration timer for non-querier, execute the global configuration command of "**ip igmp snooping querier timer expiry**". Use **no** form of this command to restore to the default value.

ip igmp snooping querier timer expiry *num*

no ip igmp snooping querier timer expiry

Parameter Description

Parameter	Description
num	Non-querier expiration timer (60-300); unit: second; default: 125 seconds

Defaults N/A

Command Mode Global configuration mode

Usage Guide After globally enabling IGMP querier, if the device is elected as a non-querier, execute this command to change the expiration timer for non-querier.
If expiration timer has been configured in the corresponding VLAN, the value specified in VLAN will be used first.

Configuration Examples The following example configures the non-querier expiration timer on the device:

```
Ruijie(config)# ip igmp snooping querier timer expiry 60
```

Related Commands

Command	Description
ip igmp snooping vlan querier timer expiry	Configures querier expiration timer in VLAN

Platform Description N/A

9.21 ip igmp snooping querier version

Use the following commands to specify IGMP Snooping querier version.

ip igmp snooping [**vlan** *vid*] **querier version 1**

ip igmp snooping [**vlan** *vid*] **querier version 2**

ip igmp snooping [**vlan** *vid*] **querier version 3**

Use **no** or **default** form of this command to restore to the default setting.

no ip igmp snooping [**vlan** *vid*] **querier version**

default ip igmp snooping [**vlan** *vid*] **querier version**

Parameter

Parameter	Description

Description	**vlan** *vid*	VLAN ID. By default, the specified version is supported on all VLANs.

Default The default version is IGMPv2.

Command Mode Global configuration mode

Usage Guide If an IGMP querier version has been configured in a VLAN, the version specified in the VLAN will be used first.

Configuration Examples The following example configures IGMP querier version on the device.

```
Ruijie(config)# ip igmp snooping querier version 1
```

Related Commands	**Command**	**Description**
	N/A	N/A

Platform Description N/A

9.22 ip igmp snooping query-max-response-time

This command specifies the time for the switch to wait for the member join message after receiving the **query** message. If the switch does not receive the member join message within the specified time, it considers that the member has left and then deletes the member.

ip igmp snooping query-max-response-time *time*

no ip igmp snooping query-max-resposne-time

Parameter Description	**Parameter**	**Description**
	time	The aging time of the routing inerface that the switch learns dynamically.

Defaults 10s

Command Mode Global configuration mode

Usage Guide You can specify the time for the switch to wait for the member join message after receiving the query message. If the switch does not receive the member join message in the specified time, it considers that the member has left and then deletes the member. This command lets you adjust the waiting time after receiving the query message. This command takes effect only after the switch receives the next member join message. This command does not change the current wait time.

Configuration Examples Set the aging time of the routing interface that the switch learns dynamically to 100s.

```
Ruijie(config)# ip igmp snooping query-max-response-time 100
```

Related Commands

Command	Function
ip igmp snooping	Configures a multicast routing interface.

9.23 ip igmp snooping source-check default-server

The source IP address check is used to permit one or several IPMC flows from the server of the specified IP address.
To configure the source IP address check function of IGMP snooping, execute the **ip igmp snooping source-check default-server** command in the global configuration mode. The **no** form of this command is used to disable the source IP address check function.

ip igmp snooping source-check default-server *address*

no ip igmp snooping souce-check

Parameter Description

Parameter	Description
address	Default multicast source IP address (IP address of the default multicast server)

Defaults Disabled.

Command Mode Global configuration mode.

Usage Guide The source IP address check function takes effect globally. Once it is enabled, only the IPMC streams from the specified IP address are permitted. The device allows users to configure the source IP address of all IPMC streams, called default multicast server. The default server must be set as long as the source IP address check function is enabled.

Configuration Examples The following example enables the multicast source IP address check function and configure a default source IP address.

```
Ruijie(config)# ip igmp snooping source-check default-server 192.168.4.243
```

Related Commands

Command	Description
Ip igmp snooping limit-ipmc vlan server	Adds an entry to the source IP check table.

9.24 ip igmp snooping source-check port

The source port check function is used to permit one or several IPMC flows from the mroute port.
To configure the source port check function of IGMP snooping, execute the **ip igmp snooping source-check port** command in the global configuration mode. The no form of this command is used to disable the source port check function.

ip igmp snooping source-check port
no ip igmp snooping source-check port

Parameter Description N/A.

Defaults Disabled.

Command Mode Global configuration mode.

Usage Guide The source port check function takes effect globally. Once it is enabled, only the IPMC streams from the specified port are permitted.

Configuration Examples The following example enables the source port check function of IGMP snooping.

```
Ruijie(config)# ip igmp snooping source-check port
```

Related Commands

Command	Description
Ip igmp snooping source-check default-server	Enables the multicast source IP address check function.

9.25 ip igmp snooping suppression enable

To enable IGMP snooping suppression, execute the **ip igmp snooping suppression enable** command in the global configuration mode.The **no** form of this command is used to disable IGMP snooping suppression..
ip igmp snooping suppression enable
no ip igmp snooping suppression enable

Parameter Description N/A

Defaults Disabled

Command Mode Global configuration mode.

Usage Guide After you execute this command to enable the suppression function, the switch begins to suppress the IGMP v1/v2 report messages.

Configuration Examples The following example enables IGMP snooping suppression on the device:

```
Ruijie(config)# ip igmp snooping suppression
```

Related Commands	N/A

9.26 ip igmp snooping svgl profile

To specify the multicast group address range applied in the SVGL/IVGL-SVGL mode, execute the **ip igmp snooping profile** *profile-number* command in the global configuration mode. Use the **no ip igmp snooping profile** command to cancel the association.

ip igmp snooping profile *profile-number*

no ip igmp snooping profile

Parameter Description	**Parameter**	**Description**
	profile-number	Profile number, in the range of 1-65535.

Default	No profile is associated.
Command Mode	Global configuration mode.
Usage Guide	When the IGMP Snooping works in the SVGL or IVGL-SVGL mode, a profile shall be associated to specify the multicast group address range applied in the SVGL or IVGL-SVGL mode. That is to say, the member ports of the multicast forwarding entry can be forwarded across the VLANs while the member ports of the multicast forwarding entry in the other multicast address range must belong to the same VLAN. By default, no profile is associated.
Configuration Examples	`Ruijie(config)# ip igmp snooping svgl profile 1`

Related Commands	**Command**	**Description**
	ip igmp snooping ivgl	Enables igmp snooping and enter the IVGL mode.
	ip igmp snooping ivgl-svgl	Enables igmp snooping and enter the hybrid mode.

9.27 ip igmp snooping svgl subvlan

To specify the subvlan of multicast VLAN, execute the global configuration command of "**ip igmp snooping svgl subvlan**". Use **no** form of this command to remove this configuration.

ip igmp snooping svgl subvlan [*vid-range*]

no ip igmp snooping svgl subvlan [*vid-range*]

Parameter Description	Parameter	Description
	vid-range	VLAN ID or range of VLAN ID

Defaults By default, no subvlan is specified for svgl, and all VLANs serve as its subvlans.

Command Mode Global configuration mode.

Usage Guide This command only takes effect in SVGL or IVGL-SVGL mode.

Configuration Examples The following example configures the device operating in igmp snooping svgl mode to associate VLAN 2, 5, 6 and 7:

```
Ruijie(config)# ip igmp snooping svgl vlan 2,5-7
```

Related Commands	Command	Description
	ip igmp snooping svgl	Enables the igmp snooping and configure the svgl mode.
	ip igmp snooping ivgl-svgl	Enables the igmp snooping and configure the IVGL-SVGL mode.
	ip igmp snooping svgl vlan	Configures the primary VLAN of SVGL mode.

Platform Description N/A

9.28 ip igmp snooping svgl vlan

To specify the vlan as the shared vlan in the SVGL mode, execute the **ip igmp snooping svgl vlan** command in the global configuration mode. The **no** form of this command restores the Shared VLAN to vlan 1..

ip igmp snooping svgl vlan *vid*

no ip igmp snooping svgl vlan

Parameter Description	Parameter	Description
	vid	VLAN ID.

Defaults By default , the shared vlan is vlan1.

Command Mode Global configuration mode.

Usage Guide This command only works in the SVGL or IVGL-SVGL mode.

Configuration The following example specifies the vlan2 as the shared vlan

Examples

```
Ruijie(config)# ip igmp snooping svgl vlan 2
```

Related Commands

Command	Description
ip igmp snooping svgl	Enable igmp snooping and enter the SVGL mode.
ip igmp snooping ivgl-svgl	Enable igmp snooping and enter the hybrid mode

9.29 ip igmp snooping tunnel

Configure the relationship between IGMP Snooping and QinQ:

ip igmp snooping tunnel

no ip igmp snooping tunnel

Parameter Description

Parameter	Description
N/A	N/A

Defaults IGMP Passthrough is disabled.

Command Mode Global configuration mode.

Usage Guide

After IGMP Snooping is enabled and dot1q-tunnel port is configured on the device, IGMP packets received from dot1q-tunnel port will be handled in two ways through IGMP Snooping:

- 1st way: Create multicast entries in the VLAN to which the IMGP packets belong, and forward IMGP packets in such VLAN.

  For example: It is assumed that IGMP Snooping has been enabled on the device; port A is a dot1q-tunnel port; the default VLAN of port A is VLAN 1, and packets from VLAN 1 and VLAN 10 can pass through port A. When multicast requests of VLAN 10 are sent to port A, IGMP Snooping will create the multicast entry of VLAN 10 and forward the multicast requests to the router port of VLAN 10.

- 2nd way: Create multicast entries in the default VLAN to which the dot1q-tunnel ports belong, and forward multicast packets in the default VLAN of dot1q-tunnel port after inserting the VLAN Tag of the default VLAN of dot1q-tunnel port.

  For example: It is assumed that IGMP Snooping has been enabled on the device; port A is a dot1q-tunnel port; the default VLAN of port A is VLAN 1, and packets from VLAN 1 and VLAN 10 can pass through port A. When multicast requests of VLAN 10 are sent to port A, IGMP Snooping will create the multicast entry of VLAN 1 and insert the VLAN Tag of VLAN 1 into multicast requests before forwarding the multicast requests to the router port of VLAN 1.

By default, the 2nd way is used.

Configuration Examples The following example enables the IGMP packets transparent transmission on the device:

```
Ruijie(config)# ip igmp snooping tunnel
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

9.30 ip igmp snooping vlan

Use this command to enable the igmp snooping on the specified vlan and enter the ivgl mode.
The **no** form of this command is used to disable the igmp snooping.
ip igmp snooping vlan *vid*
no ip igmp snooping vlan *vid*

Parameter Description	Parameter	Description
	vid	VLAN ID

Defaults Disabled

Command Mode Global configuration mode.

Usage Guide

Use this command to enable or disable the IGMP snooping on the specified vlan.

> ⚠ The pim snooping on the specified vlan works only when the igmp snooping configured. When disabling the igmp snooping on the vlan with the pim snooping configured, it prompts to disable the pim snooping first and this execution fails.

Configuration Examples The following example enables the igmp snooping on the vlan2.

```
Ruijie(config)# ip igmp snooping vlan 2
```

Related Commands	Command	Description
	ip igmp snooping ivgl	Enables the igmp and enter the ivgl mode.
	ip igmp snooping ivgl-svgl	Enables the igmp snooping and enter the ivgl-svgl mode.

9.31 ip igmp snooping vlan mrouter interface

Routing interface is a port through which a multicast device is directly connected to a multicast neighbouring device. To configure a multicast routing interface, execute the **ip igmp snooping vlan mrouter interface** command in the global configuration mode. The **no** form of this command is used to delete a routing interface.

ip igmp snooping vlan *vid* **mrouter interface** *interface-id*
no ip igmp snooping vlan *vid* **mrouter interface** *interface-id*

Parameter Description	Parameter	Description
	vid	VLAN ID of a routing interface
	interface-id	Interface ID

Defaults N/A

Command Mode Global configuration mode

Usage Guide When the source port check function is enabled, only the multicast flows from the routing interface are forwarded, and other flows will be discarded.

Configuration Examples The following example demonstrates how to configure a multicast routing interface on the equipment:

```
Ruijie(config)# ip igmp snooping vlan 1 mrout erinterface fastEthernet 0/1
```

Related Commands	Command	Description
	ip igmp snooping source-check port	Enables the multicast source port check function.

9.32 ip igmp snooping vlan static interface

Once IGMP snooping is enabled, a port can receive a certain multicast frame without being afftected by various IGMP messges by executing the **ip igmp snooping vlan static interface** command in the global configuration mode. The **no** form of this command is used to delete a static configuration.
ip igmp snooping vlan *vid* **static** ip-addr **interface** *interface-id*
no ip igmp snooping vlan *vid* **static** *ip-addr* **interface** *interface-id*

Parameter Description	Parameter	Description
	vid	VLAN ID of a routing interface
	ip-addr	Multicast IP address
	interface-id	Interface ID

Defaults N/A

Command Mode Global configuration mode

Usage Guide Multiple multicast IP addresses can be configured for an interface.

Configuration Examples

The following example demonstrates how to configure a static multicast address on a port:

```
Ruijie(config)# ip igmp snooping vlan 1 static 224.1.1.1 interface
GigabitEthernet 0/1
```

Related Commands

Command	Description
ip igmp snooping vlan mdevice interface	Configures a multicast routing interface

9.33 permit

To permit the forwarding of the multicast streams in the range specified by the profile, execute the **permit** command in the profile configuration mode. In this way, the interface associated with this profile will forward the specified multicast stream only.

Permit

Parameter Description N/A

Defaults The forwarding of the multicast streams in the range specified by the profile is denied.

Command Mode Profile configuration mode

Usage Guide First, configure the multicast range using the range command in the profile configuration mode. In addition, the profile must be applied to the interface in order to make the profile configuration to take effective.

Configuration Examples

The following is an example of allowing the forwarding of the multicast stream 224.2.2.2:

```
Ruijie(config)# ip igmp profile 1
Ruijie(config-profile)# range 224.2.2.2
Ruijie(config-profile)# permit
```

Related Commands

Command	Description
ip igmp profile	Creates a profile.
range	Configures the multicast address range.

9.34 range

To specify the range of multicast streams, execute the **range** command in the profile configuration mode. You can specify either a single multicast address or a range of multicast addresses. Use the **no** form of the command to remove the specified multicast IP address.

range *low-ip-address* [*high-ip-address*]

no range *low-ip-address* [*high-ip-address*]

Parameter Description

Parameter	Description
low-ip-address	Start address of a range
high-ip-address	End address of a range

Defaults N/A

Command Mode Profile configuration mode

Usage Guide You can specify a behavior after configuring the address range, for example deny by default. In addition, the profile must be applied to the interface in order to make the profile configuration take effect.

Configuration Examples The following is an example of creating a profile whose multicast stream is in the range 224.2.2.2 to 224.2.2.244:

```
Ruijie(config)# ip igmp profile 1
Ruijie(config-profile)# range 224.2.2.2 224.2.2.244
```

Related Commands

Command	Description
ip igmp profile	Creates a profile.
deny	Denies the forwarding of the multicast streams in the range specified by the profile.
permit	Permits the forwarding of the multicast streams in the range specified by the profile.

9.35 show ip igmp profile

Use this command to show the profile information.

show ip igmp profile

show ip igmp profile *profile-number*

Parameter Description

Parameter	Description
none	Displays configuration information of all profiles.
profile-number	Displays configuration information of the designated profile.

Command Mode Privileged EXEC mode

Configuration Examples

```
Ruijie(config-if)# show ip igmp profile
Profile 1
Permit
```

```
range 224.0.1.0, 239.255.255.255
```

9.36 show ip igmp snooping

Use this command to show related information of igmp snooping.

show ip igmp snooping [**gda-table** | **interfaces** *interface-type interface-number* | **mdevice**| **statistics** [**vlan** *vlan-id*] | **querier** [**detail | vlan** *vid*] | **user-info**]

Parameter Description

Parameter	Description
vlan *vid*	VLAN ID. By defualt, IGMP Snooping information of all VLANs are displayed.
interface-type interface-number	Interface type and number

Command Mode

Privileged EXEC mode

Configuration Examples

The following example displays global IGMP Snooping information.

```
Ruijie#show ip igmp snooping
IGMP Snooping running mode: IVGL
IGMP Snooping L2-entry-limit: 65536
Source port check: Disable
Source ip check: Disable
IGMP Fast-Leave: Disable
IGMP Report suppress: Disable
IGMP Globle Querier: Disable
IGMP Preview: Disable
IGMP Tunnel: Disable
IGMP Snooping version: 2IGMP Preview group aging time : 60(Seconds)
Dynamic Mroute Aging Time : 300(Seconds)
Dynamic Host Aging Time : 260(Seconds)
The following example displays VLAN1 IGMP Snooping information.Ruijie#show
ip igmp snooping vlan 1
IGMP Snooping running mode: IVGL
IGMP Snooping L2-entry-limit: 65536
Global IGMPv2 Fast-Leave :Disable
Global multicast router learning mode :Enable
Query Max Respone Time: 10 (Seconds)
Dynamic Mroute Aging Time : 300(Seconds)
Dynamic Host Aging Time : 260(Seconds)

vlan 1
-------------
```

```
IGMP Snooping state: Enable
Multicast router learning mode: pim-dvmrp
IGMP Fast-Leave: Disable
IGMP VLAN querier: Disable
IGMP VLAN Mode: STATIC
```

10 MLD Snooping Commands

10.1 clear ipv6 mld snooping gda-table

Use this command to clear the forwarding table information learned dynamically.

clear ipv6 mld snooping gda-table

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Use this command to clear the forwarding table information learned dynamically.

Configuration Examples The following example clears the forwarding table information learned dynamically:

```
Ruijie# clear ipv6 mld snooping gda-table
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10.2 clear ipv6 mld snooping statistics

Use this command to clear the MLD Snooping statistics, including the entry number, the entry volume, the number of various received packets, the group information and the interface information of the corresponding group.

clear ipv6 mld snooping statistics

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Privileged EXEC mode

Mode

Usage Guide Use the **show ipv6 mld snooping statistics** command to verify the configuration.

Configuration Examples The following example clears the MLD Snooping statistics.

```
Ruijie# clear ipv6 mld snooping statistics
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10.3 deny

Use this command to prevent the multicast flow profile within the specified range from being forwarded in the profile configuration mode.

deny

Parameter Description

Parameter	Description
N/A	N/A

Defaults The default profile action is **deny**.

Command Mode Profile configuration mode

Usage Guide Before configuring this command, use the **range** command to set the multicast range first.

Configuration Examples The following example prevents the multicast flow profile within the range of FF77::100 from being forwarded.

```
Ruijie(config)# ipv6 mld profile 1
Ruijie(config-profile)# range FF77::100
Ruijie(config-profile)# deny
```

Related Commands

Command	Description
ipv6 mld profile	Creates one profile.
range	Sets the multicast address range.
permit	Sets the profile action permit.

Platform Description N/A

10.4 ipv6 mld profile

Use the following command to create a profile. Use the **no** or **default** form of this command to delete a profile.

ipv6 mld profile *profile-number*

no ipv6 mld profile *profile-number*

default ipv6 mld profile *profile-number*

Parameter Description

Parameter	Description
profile-number	Profile number, in the range from 1 to 1024.

Defaults N/A

Command Mode Global configuration mode

Usage Guide Profile is a kind of group “filter” that can be referred to by other functions.

Configuration Steps:

1. Use the **ipv6mld profile** command to create a profile and enter the profile mode.
2. Use the **range** command to define a group.
3. Use the **permit** command to allow this group to pass the filtering; Use the **deny** command to filter the packets of this group. The default command is **deny**.

Configuration Examples The following example creates profile 1 and allows the packets sent by devices with MAC address ranging from FF15::1 to FF15::100 to pass the filtering.

```
Ruijie(config)#ipv6 mld profile 1
Ruijie(config-profile)#range FF15::1 FF15::100
Ruijie(config-profile)#permit
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10.5 ipv6 mld snooping

Use this command to enable MLD Snooping and specify IVGL/SVGL/IVGL-SVGL mode. Use the **no**

or **default** form of this command to restore the default setting.

ipv6 mld snooping {**ivgl | svgl | ivgl-svgl**}

no ipv6 mld snooping [**ivgl** | **svg**l | **ivgl**-**svgl]**

default ipv6 mld snooping [**ivgl** | **svgl** | **ivgl-svgl**]

Parameter Description

Parameter	Description
ivgl	MLD Snooping is running IVGL mode.
svgl	MLD Snooping is running SVGL mode.
ivgl-svgl	MLD Snooping is running IVGL-SVGL mode.

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide

- In IVGL mode, multicast flow in each VLAN is independent. The host only requests multicast flow from the routing interface within the same VLAN. The device forwards the multicast flow from any VLAN to the member port within the same VLAN.
- In SVGL mode, multicast flow is shared among VLANs. The host can request multicast flow across VLANs. Shared VLAN (VLAN 1 by default) should be specified. Only multicast flow from Shared VLAN can be forwarded to all member ports within the group address range, which may belong to different VLANs. Profile is used to specify a group range for SVGL. Only multicast flow within this range can be forwarded across VLANs. The other multicast flow is discarded.
- In IVGL-SVGL mode, Profile is used to specify a group range for SVGL. Multicast flow within this range is in SVGL mode and the other multicast flow is in IVGL mode.

Configuration Examples The following example enables MLD Snooping IVGL mode.

```
Ruijie(config)# ip igmp snooping ivgl
```

The following example enables MLD Snooping SVGL mode and specifies the shared VLAN and SVGL group range as VLAN1 and profile1 respectively.

```
Ruijie(config)# ip igmp snooping svgl
Ruijie(config)# ip igmp snooping svgl profile 1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10.6 ipv6 mld snooping dyn-mr-aging-time

Use this command to set the aging time of the dynamic multicast route port. Use the **no** or **default** form of this command to restore the default setting.

ipv6 mld snooping dyn-mr-aging-time *time*

no ipv6 mld snooping dyn-mr-aging-time

default ipv6 mld snooping dyn-mr-aging-time

Parameter Description

Parameter	Description
time	Sets the aging time of the dynamic multicast route port, in the range from 1 to 3600 in the unit of seconds.

Defaults The default is 300.

Command Mode Global configuration mode.

Usage Guide The switch will remove the dynamic multicast router interface from the router interface list if it fails to receive the MLD general group query packets or the Ipv6 PIM Hello packets within the aging timeout on this interface.

Configuration Examples The following example sets the aging time of the dynamic multicast route port to 500 seconds.

```
Ruijie(config)# ipv6 mld snooping dyn-mr-aging-time 500
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10.7 ipv6 mld snooping fast-leave enable

Use this command to enable the MLD Snooping fast-leave in the global configuration mode. Use the **no** or **default** form of this command to restore the default setting.

ipv6 mld snooping fast-leave enable

no ipv6 mld snooping fast-leave enable

default ipv6 mld snooping fast-leave enable

Parameter Description

Parameter	Description

N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode.

Usage Guide The interface fast leave is that when IPv6 MLD Leave packets sent from the host are received on an interface, the interface is removed form the outgoing interface list of the corresponding forwarding entry. Then, the switch will not forward the received IPv6 MLD specific group query packets to the interface. If there is only one receiver connected with the interface, enable the interface fast leave function to save the bandwidth and resources.

Configuration Examples The following example enables mld snooping fast-leave.

```
Ruijie(config-if)# ipv6 mld snooping fast-leave
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10.8 ipv6 mld snooping filter

Use this command to filter the specific multicast flow in the interface configuration mode. Use the **no** or **default** form of this command to restore the default setting.

ipv6 mld snooping filter *profile-number*

no ipv6 mld snooping filter

default ipv6 mld snooping filter

Parameter Description

Parameter	Description
profile-number	Sets the profile number in the range from 1 to 1024.

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide You can configure an MLD Profile on an interface. If the MLD Report packets are received on the interface, the layer-2 device will determine whether the multicast address to be joined the interface is within the allowed range of the MLD Profile. The specified profile must be created before using this command.

Configuration Examples The following example associates profile1 with the interface fastEthernet 0/1.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ipv6 mld snooping filter 1
```

Related Commands

Command	Description
ipv6 mld profile	Creates a profile.

Platform Description N/A

10.9 ipv6 mld snooping host-aging-time

Use this command to set the aging time of the dynamic member port.
Use the **no** form of this command to cancel this configuration.
Use the **default** form of this command to restore the aging time to the default setting.
ipv6 mld snooping host-aging-time *seconds*
no ipv6 mld snooping host-aging-time
default ipv6 mld snooping host-aging-time

Parameter Description

Parameter	Description
seconds	Sets the aging time of the dynamic member port, in seconds, ranging from 1-65536 in the unit of seconds.

Defaults The default aging time of the dynamic member port is 260 seconds.

Command Mode Global configuration mode

Usage Guide The switch will remove the dynamic multicast router interface from the router interface list if it fails to receive the MLD general group query packets or the IPv6 PIM Hello packets within the aging timeout on this interface.
When the MLD Snooping is enabled, the port that receives the MLD Report packet will learn to be a dynamic member port. The default aging time of such dynamic member port is 260 seconds. You can use this command to adjust the aging time. This configuration takes effect after the port receives the the next Report packet. The aging time of the dynamic member port should be longer than the query interval.

Configuration Examples The following example shows how to sets the aging time of the dynamic member port to 200 seconds:

```
Ruijie(config)# ipv6 mld snooping host-aging-time 200
```

Related

Command	Description

Commands		
	N/A	N/A

Platform Description N/A

10.10 ipv6 mld snooping max-groups

Use this command to set the maximum group allowed to join the interface dynamically in the interface configuration mode. Use the **no** or **default** form of this command to restore the default setting.

ipv6 mld snooping max-groups *number*

no ipv6 mld snooping max-groups

default ipv6 mld snooping max-groups

Parameter Description	Parameter	Description
	number	The number of groups, in the range from 0 to 65536

Defaults The default is 65536.

Command Mode Interface configuration mode

Usage Guide With this command configured, when the group number exceeds the specified range on the interface, the switch will not receive and deal with the MLD Report packets.

Configuration Examples The following example sets the maximum 100 multicast group on the interface fastEthernet 0/1.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ipv6 mld snooping max-group 100
```

Related Commands	Command	Description
	ipv6 mld snooping filter	Filters the multicast group on the interface.

Platform Description N/A

10.11 Ipv6 mld snooping mrouter learn

Use this command to enable the switch to dynamically learn MLD query or PIM packets to identify the mrouter interface automatically. Use the **no** form of this command to disable this function. Use the **default** form of this command to restore the default setting.

ipv6 mld snooping [**vlan** *vid*] **mrouter learn**

no ipv6 mld snooping [**vlan** *vid*] **mrouter learn**
default ipv6 mld snooping [**vlan** *vid*] **mrouter learn**

Parameter Description

Parameter	Description
vlan *vid*	The vlan ID, in the range from 1 to 4094.

Defaults This function is enabled by default.

Command Mode Global configuration mode

Usage Guide The mrouter interface is the interface of the multicast device connected with the peer device. By default, the dynamically-learned mroute interface is enabled on the layer-2 multicast device. Use the **no** option to disable this function and clear all dynamically-learned mroute interfaces.

With the source port check enabled, only the multicast flow through the mroute interface are valid and forwarded to the registered interface on the layer-2 multicast device. Those multicast flow through the non-mroute interface are invalid and will be discarded.

Configuration Examples The following example enables the dynamic multicast route port learn function for VLAN1.

```
Ruijie(config)# no ipv6 mld snooping mrouter learn
Ruijie(config)# ipv6 mld snooping vlan 1 mrouter learn
```

Related Commands N/A

10.12 ipv6 mld snooping query-max-response-time

Use this command to set t the maximum response time of the MLD general query packet. Use the **no** or **default** form of this command to restore the default setting.
ipv6 mld snooping query-max-response-time *seconds*
no ipv6 mld snooping query-max-response-time
default ipv6 mld snooping query-max-response-time

Parameter Description

Parameter	Description
seconds	Sets the maximum response time of the MLD general query packet in the range from 1 to 65535 in the unit of seconds.

Defaults The default is 10 seconds.

Command Mode Interface configuration mode

Usage Guide Upon receiving the MLD general query packets, the Layer-2 multicast device updates the aging timer of all member ports. The time of the timer is the longest response value. When the timer value decreases to 0, it indicates that there is no member receiving the multicast flow on the interface, and the Layer-2 device removes this interface from the MLD Snooping forwarding list.
Upon receiving the MLD specific group query packets, the Layer-2 multicast device enables the aging timer of all member ports in this specific group. The time of the timer is the longest response value. When the timer value decreases to 0, it indicates that there is no member receiving the multicast flow on the interface, and the Layer-2 device removes this interface from the MLD Snooping forwarding list.
For the source query packets of the MLD specific group, the timer is not updated.
The configured maximum response time

Configuration Examples The following example sets the maximum response time of the MLD general query packet to 15 seconds.

```
Ruijie(config)# ipv6 mld snooping query-max-response-time 15
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10.13 ipv6 mld snooping source-check port

The source-check port is used to allow the multicast flow to enter through the mrouter interface. Use this command to enable the mld source-check port in the global configuration mode. Use the **no** or **default** form of this command to restore the default setting.
ipv6 mld snooping source-check port
no ipv6 mld snooping source-check port
default ipv6 mld snooping source-check port

Parameter Description

Parameter	Description
N/A	N/A

Defaults The source-check port is disabled by default.

Command Mode Global configuration mode

Usage Guide The MLD Snooping source port check function is to limit the MLD multicast flow through the interace strictly. With the source port check disabled, all video flow are illegal and forwarded to the registered

member port according to the MLD Snooping forwarding list. With the MLD Snooping source port check enabled, only the mulitcast flow through the mroute interface is legal and forwarded to the registered interface by the layer-2 multicast device; and the multicast flow through the non-mroute interface are illegal and discarded.

This command is used to enabled the source port check globally. Once this function is enabld, all multicast flow must come from the mroute interface, or they'll be discarded.

Configuration Examples The following example shows how to enable MLD Snooping source-check port:

```
Ruijie(config-if)# ipv6 mld snooping source-check port
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10.14 ipv6 mld snooping suppression enable

Use this command to enable the MLD Snooping suppression in the global configuration mode. Use the **no** or **default** form of this command to restore the default setting.

ipv6 mld snooping suppression enable

no ipv6 mld snooping suppression enable

default ipv6 mld snooping suppression enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults The MLD Snooping suppression function is disabled by default.

Command Mode Global configuration mode.

Usage Guide With the IPv6 MLD Snooping suppression function enabled, within the query interval, the layer-2 device will only forward the first received MLD Report packet in an IPv6 multicast group to the layer-3 device, but not the other MLD Report packets in the same IPv6 multicast group, reducing the packet number in the network.

This command is used to enable the IPv6 MLD Snooping suppression, and only the MLDv1 Report packets are suppressed rather than the MLDv2 Report packets.

Configuration Examples The following example enables MLD Snooping suppression.

```
Ruijie(config-if)# ipv6 mld snooping suppression
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

10.15 ipv6 mld snooping svgl profile

Use this command to specify the group address range to be in the SVGL mode. Use the **no** or **default** form of this command to restore the default setting.

ipv6 mld snooping svgl profile *profile-number*

no ipv6 mld snooping svgl profile

default ipv6 mld snooping svgl profile

Parameter Description	Parameter	Description
	profile-number	Sets the profile number, in the range from 1 to 1024.

Defaults No profiles are associated with svgl by default.

Command Mode Global configuration mode

Usage Guide With the SVGL mode or IVGL-SVGL mode configured for the MLD Snooping working mode, a profile shall be associated with the IVGL for the purpose of specifying the group address range in the SVGL mode. That is to say, the member port of the multicast forwarding entry can be forwarded across the VLANs, while the member ports of the corresponding multicast forwarding entries within other multicast address range must belong to the same VLAN. By default, no profile is associated, which means that apply no multicast group in the SVGL mode.

Configuration Examples The following example specifies the SVGL mode application range as the profie1 group address range.

```
Ruijie(config)# ipv6 mld snooping svgl profile 1
```

Related Commands	Command	Description
	ipv6 mld snooping ivgl	Enables the MLD Snooping and set the ivgl mode.
	ipv6 mld snooping ivgl-svgl	Enables the MLD Snooping and set the ivgl-svgl mode.

Platform N/A

Description

10.16 ipv6 mld snooping svgl vlan

Use this command to specify the shared VLAN in MLD Snooping SVGL mode.
Use the **no** or **default** form of this command to restore the default setting.
ipv6 mld snooping svgl vlan *vid*
no ipv6 mld snooping svgl vlan
default ipv6 mld snooping svgl vlan

Parameter Description

Parameter	Description
vid	The VLAN ID, in the range from 1 to 4094.

Defaults The default is 1.

Command Mode Global configuration mode

Usage Guide This command is used to specify the SVGL shared VLAN if MLD Snooping is running in SVGL or IVGL-SVGL mode.

Configuration Examples The following example sets the shared VLAN in MLD Snooping SVGL mode to 5.

```
Ruijie(config)# ipv6 mld snooping svgl vlan 5
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10.17 ipv6 mld snooping vlan

Use this command to enable the MLD Snooping function for the specified VLAN. Use the **no** form of this command to disable this function. Use the default form of this command to restore the default setting.
ipv6 mld snooping vlan *vid*
no ipv6 mld snooping vlan *vid*
default ipv6 mld snooping vlan *vid*

Parameter Description

Parameter	Description

vid	The VLAN ID, in the range from 1 to 4094.

Defaults The MLD Snooping function is enabled by default.

Command Mode Global configuration mode

Usage Guide By default, the MLD Snooping is enabled in all VLANs. You can disable the MLD Snooping for the specified VLAN.

Configuration Examples The following example disables the MLD Snooping function in vlan1:

```
Ruijie(config)# no ipv6 mld snooping vlan 1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10.18 ipv6 mld snooping vlan mrouter interface

Use this command to set the static mrouter interface.
Use the **no** form of this command to restore the default setting.
ipv6 mld snooping vlan *vid* **mrouter interface** *interface-type interface-number*
no ipv6 mld snooping vlan *vid* **mrouter interface** *interface-type interface-number*
default ipv6 mld snooping vlan *vid* **mrouter interface** *interface-type interface-number*

Parameter Description

Parameter	Description
vid	The VLAN ID, in the range from 1 to 4094.
interface-type interface-number	The interface number

Defaults No static mrouter interface is configured by default.

Command Mode Global configuration mode

Usage Guide Use this command to set the static mrouter interface for the purpose that all IPv6 multicast data received on the switch can be forwarded. With the source port check function enabled, only the multicast flow through the mroute interface can be forwarded.

Configuration Examples The following example sets a multicast routing port:

```
Ruijie(config)# ipv6 mld snooping vlan 1 mrouter interface fastEthernet 0/1
```

Related Commands

Command	Description
ipv6 mld snooping source-check port	Sets the multicast source port check.

Platform Description N/A

10.19 ipv6 mld snooping vlan mrouter learn

Use this command to enable the switch to dynamically learn MLD query or PIM packets to identify the mrouter interface automatically. Use the **no** form of this command to disable this function.

ipv6 mld snooping vlan *vid* **mrouter learn**

no ipv6 mld snooping vlan *vid* **mrouter learn**

Parameter Description

Parameter	Description
vid	The vlan id, in the range from 1 to 4094. The default is 1.

Defaults This function is enabled by default.

Command Mode Global configuration mode.

Usage Guide The mrouter interface is the interface of the multicast device connected with the peer device. By default, the dynamically-learned mroute interface is enabled on the layer-2 multicast device. Use the **no** option to disable this function and clear all dynamically-learned mroute interfaces. With the source port check enabled, only the multicast flow through the mroute interface are valid and forwarded to the registered interface on the layer-2 multicast device. Those multicast flow through the non-mroute interface are invalid and will be discarded. With the source port check function enabled, use the dynamically-learned mroute interfaces to improve the mld snooping flexibility.

Configuration Examples The following example enables the dynamic multicast route port learn function.

```
Ruijie(config)# ipv6 mld snooping vlan 1 mrouter learn
```

Related Commands

Command	Description
ipv6 mld snooping vlan mrouter interface	Sets the mrouter interface.

Platform Description N/A

10.20 ipv6 mld snooping vlan static interface

Use this command to set a static member port to receive the multicast flow for the purpose of preventing the port from being influenced by the MLD Report packets with the MLD Snooping enabled. Uses the **no** form of this command to restore the default setting.

ipv6 mld snooping vlan *vid* **static** *group-address* **interface** *interface-type interface-number*

no ipv6 mld snooping vlan *vid* **static** *group-address* **interface** *interface-type interface-number*

Parameter Description

Parameter	Description
vid	The vlan id, in the range from 1 to 4094. The default is 1.
group-address	The multicast address
interface-type interface-number	The interface number

Defaults No static member port is configured by default.

Command Mode Global configuration mode

Usage Guide Use this command to set the interface as the member port of multiple static multicast addresses.

Configuration Examples The following example sets the interface fastEthernet 0/1 as the static member port of the FF88::1 group.

```
Ruijie(config)# ipv6 mld snooping vlan 1 static FF88::1 interface fastEthernet 0/1
```

Related Commands

Command	Description
ipv6 mld snooping vlan mrouter interface	Sets the mrouter interface.

Platform Description N/A

10.21 permit

Use this command to allow the multicast flow profile within the specified range in the profile configuration mode.

permit

Parameter Description

Parameter	Description

N/A	N/A

Defaults The default profile action is **deny**.

Command Mode Profile configuration mode

Usage Guide Before configuring this command, use the **range** command to set the multicast range first.

Configuration Examples The following example allows the multicast flow profile within the range of FF77::1 to be forwarded only:

```
Ruijie(config)# ipv6 mld profile 1
Ruijie(config-profile)# range FF77::1
Ruijie(config-profile)# permit
```

Related Commands

Command	Description
ipv6 mld profile	Creates one profile.
range	Sets the multicast address range.
deny	Sets the profile action deny.

Platform Description N/A

10.22 range

Use this command to specify the profile multicast flow range, which can be one single multicast address, or can be the multicast address within the specified range when configuring a profile in the profile configuration mode.

range *low-ipv6-address* [*high-ip-address*]

Parameter Description

Parameter	Description
low-ip-address	The low address within the specified range
high-ip-address	The high address within the specified range

Defaults No range is defined by default.

Command Mode Profile configuration mode

Usage Guide The value of low-ipv6-address shall be smaller than the one of high-ipv6-address. With the address range configured, an action shall be specified, and the default profile action is deny.

Configuration Examples The following example creates the multicast flow profile within the range of FF77::1~FF77::100.

```
Ruijie(config)# ipv6 mld profile 1
Ruijie(config-profile)# range FF77::1 FF77::100
```

Related Commands

Command	Description
ipv6 mld profile	Creates one profile.
deny	Sets the profile action deny.
permit	Sets the profile action permit.

Platform Description N/A

10.23 show ipv6 mld profile

Use this command to display the related MLD profile configuration.

show ipv6 mld profile *profile-number*

Parameter Description

Parameter	Description
profile-number	Displays the configuration of the specified profile.

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide Use this command to display the related MLD profile configuration.

Configuration Examples The following example displays the MLD profile configuration.

```
Ruijie# show ipv6 mld profile 1
MLD Profile 1
permit
range FF77::1 FF77::100
range FF88::123
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10.24 show ipv6 mld snooping

Use this command to display the related MLD Snooping information.

show ipv6 mld snooping [**gda-table** | **interfaces** *interface-type interface-number* | **mrouter** | **statistics**[**vlan** *vid*] | **vlan** *vid*]

Parameter Description

Parameter	Description
gda-table	Displays the multicast forwarding rule table.
Interfaces *interface-type interface-number*	Displays the MLD Snooping filtering configuration.
mrouter	Displays the information about mrouter interface.
statistics	Displays the MLD Snooping statistics.
vlan *vlan-id*	Displays the MLD Snooping information of the specified vlan.

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide Use this command to display the related MLD Snooping information.

Configuration Examples The following example displays the MLD Snooping configurations using the **show ipv6 mld snooping** command:

```
Ruijie# show ipv6 mld snooping
MLD-snooping mode      : IVGL
SVGL vlan-id           : 1
SVGL profile number    : 0
Source check port      : Disabled
Query max respone time : 10(Seconds)
```

The following example displays the mrouter interface of the MLD Snooping using the **show ipv6 mld snooping statistics** command:

```
Ruijie# show ipv6 mld snooping statistics
GROUP   Interface  Last report    Last leave     Last
                       time       time         reporter
-------------------------- ------------- -------------
FF88::1 VL1:Gi4/2    0d:0h:0m:7s     ----     2003::1111
                      Report pkts: 1        Leave pkts: 0
```

The following example displays the mrouter interface of the MLD Snooping using the **show ipv6 mld snooping mrouter** command:

```
Ruijie# show ipv6 mld snooping mrouter
Vlan    Interface       State     MLD profile number
----     --------         -------     -------------------
```

```
1   GigabitEthernet 0/7    static        1
1   GigabitEthernet 0/12   dynamic       0
```

The following example displays the multicast group information in the GDA table and all member ports information of one multicast group:

```
Ruijie# show ipv6 mld snooping gda-table
Abbr: M - mrouter
     D - dynamic
     S - static
VLAN  Address            Member ports
------------------------------------------------------------
1      FF88::1          GigabitEthernet 0/7(S)
```

The following example displays the MLD Snooping filtering configuration using the **show ipv6 mld snooping mrouter** command:

```
Ruijie# show ipv6 mld snooping interface GigabitEthernet 0/7
Interface         Filter Profile number     max-groups
----------       ----------------------    -----------
GigabitEthernet 0/7          1              4294967294
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

Security Configuration Commands

1. AAA Commands
2. RADIUS Commands
3. TACACS+ Commands
4. SCC Commands
5. Password-Policy Commands
6. Storm Control Commands
7. SSH Commands
8. URPF Commands
9. CPU Protection Commands
10. DHCP Snooping Commands
11. NFPP Commands
12. Security-log Commands

1 AAA Commands

1.1 aaa accounting commands

Use this command to account users in order to enable NAS command accounting.
Use the **no** form of this command to restore the default setting.
aaa accounting commands *level* **{ default |** *list-name* **} start-stop** *method1* [*method2*…]
no aaa accounting commands *level* { **default |** *list-name* }

Parameter Description

Parameter	Description
level	The accounting command level, 0-15. The message shall be recorded before determing which command level is executed.
default	When this parameter is used, the following defined method list is used as the default method for command accounting.
list-name	Name of the command accounting method list, which could be any character strings.
method	It must be one of the keywords listed in the following table. One method list can contain up to four methods.
none	Does not perform accounting.
group	Uses the server group for accounting, the TACACS+ server group is supported.

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide RGOS enables the accounting command function after enabling the login authentication. After enabling the accounting function, it sends the command information to the security service.
The configured accounting command method must be applied to the terminal line that needs accounting command; otherwise it is ineffective.

Configuration Examples The following example enables NAS command accounting.

```
Ruijie(config)# aaa accounting commands 15 default start-stop group tacacs+
```

Related Commands

Command	Description
aaa new-model	Enables the AAA security service.
aaa authentication	Defines AAA authentication.
accounting commands	Applies the accounting commands to the terminal line.

Platform N/A

Description

1.2 aaa accounting exec

Use this command to enable NAS access accournting. Use the **no** form of this command to restore the default setting.

aaa accounting exec { **default |** *list-name* } **start-stop** *method1* [*method2...*]

no aaa accounting exec { **default** | *list-name* }

Parameter Description

Parameter	Description
default	When this parameter is used, the following defined method list is used as the default method for Exec accounting.
list-name	Name of the Exec accounting method list, which could be any character strings
method	It must be one of the keywords: **none** and **group**. One method list can contain up to four methods.
none	Does not perform accounting.
group	Uses the server group for accounting, the RADIUS and TACACS+ server group is supported.

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide RGOS enables the exec accounting function after enabling the login authentication.

After enabling the accounting function, it sends the account start information to the security server when the users log in the NAS CLI, and sends the account stop information to the security server when the users log out. If it does not send the account start information to the security server when a user logs in, it does not send the account stop information to the security server when a user logs out, either.

The configured exec accounting method must be applied to the terminal line that needs accounting command; otherwise it is ineffective.

Configuration Examples The following example enables NAS access accounting.

```
Ruijie(config)# aaa accounting network start-stop group radius
```

Related Commands

Command	Description
aaa new-model	Enables the AAA security service.
aaa authentication	Defines AAA authentication.
accounting commands	Applies the Exec accounting to the terminal line.

Platform Description N/A

1.3 aaa accounting network

Use this command to enable network access accounting. Use the **no** form of this command to restore the default setting.

aaa accounting network { default | *list-name* **} start-stop** *method1* [*method2*..]

no aaa accounting network { **default** | *list-name* }

Parameter Description

Parameter	Description
default	When this parameter is used, the following defined method list is used as the default method for Network accounting.
list-name	Name of the accounting method list
method	Sends accounting messages at both the start time and the end time of access. Users are allowed to access the network, no matter whether the start accounting message enables the accounting successfully.
none	Does not perform accounting.
group	Uses the server group for accounting, the RADIUS and TACACS+ server group is supported.

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide RGOS performs accounting of user activities by sending record attributes to the security server. Use the **start-stop** keyword to set the user accounting option.

Configuration Examples The following example enables network access accounting.

```
Ruijie(config)# aaa accounting network start-stop group radius
```

Related Commands

Command	Description
aaa new-model	Enables the AAA security service.
aaa authorization network	Defines a network authorization method list.
aaa authentication	Defines AAA authentication.
username	Defines a local user database.

Platform Description N/A

1.4 aaa accounting update

Use this command to enable the accounting update function Use the **no** form of this command to restore the default setting.

aaa accounting update
no aaa accounting update

Parameter Description N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide If the AAA security service is not enabled, the accounting update function cannot be used. This command is used to set the accounting interval if the AAA security service has been enabled.

Configuration Examples The following example enables the accounting update function.

```
Ruijie(config)# aaa new-model
Ruijie(config)# aaa accounting update
```

Related Commands

Command	Description
aaa new-model	Enables the AAA security service.
aaa accounting network	Defines a network accounting method list.

Platform Description N/A

1.5 aaa accounting update periodic

If the accounting update function has been enabled, use this command to set the interval of sednign the accounting update message. Use the **no** form of this command to restore the default setting.
aaa accounting update periodic *interval*
no aaa accounting update periodic

Parameter Description

Parameter	Description
interval	Interval of sending the accounting update message, in the unit of minutes. The shortest interval is 1 minute.

Defaults The default is 5 minutes.

Command Mode Global configuration mode

Usage Guide If the AAA security service is not enabled, the accounting update function cannot be used. This command is used to set the accounting interval if the AAA security service has been enabled.

Configuration Examples The following example sets the interval of accounting update to 1 minute.

```
Ruijie(config)# aaa new-model
Ruijie(config)# aaa accounting update
Ruijie(config)# aaa accounting update periodic 1
```

Related Commands

Command	Description
aaa new-model	Enables the AAA security service.
aaa accounting network	Defines a network accounting method list.

Platform Description N/A

1.6 aaa authentication enable

Use this command to enable AAA Enable authentication and configure the Enable authentication method list. Use the **no** form of this command to delete the user authentication method list.

aaa authentication enable { **default** | *list-name* } *method1* [*method2*..]

no aaa authentication enable default

Parameter Description

Parameter	Description
default	When this parameter is used, the following defined authentication method list is used as the default method for Enable authentication.
method	It must be one of the keywords: **local**, **none** and **group**. One method list can contain up to four methods.
local	Uses the local user name database for authentication.
none	Does not perform authentication.
group	Uses the server group for authentication. At present, the RADIUS and TACACS+ server groups are supported.

Defaults N/A

Command Mode Global configuration mode

Usage Guide If the AAA Enable authentication service is enabled on the device, users must use AAA for Enable authentication negotiation. You must use the **aaa authentication enable** command to configure a default or optional method list for Enable authentication.

The next method can be used for authentication only when the current method does not work.

The Enable authentication function automatically takes effect after configuring the Enable authentication method list.

Configuration Examples The following example defines an AAA Enable authentication method list. In the authentication method list, first the RADIUS security server is used for authentication. If the RADIUS security server does not respond, the local user database is used for authentication.

```
Ruijie(config)# aaa authentication enable default group radius local
```

Related Commands

Command	Description
aaa new-model	Enables the AAA security service.
enable	Switchover the user level.
username	Defines a local user database.

Platform Description N/A

1.7 aaa authentication login

Use this command to enable AAA Login authentication and configure the Login authentication method list. Use the **no** form of this command to delete the authentication method list.

aaa authentication login { **default** | *list-name* } *method1* [*method2*..]

no aaa authentication login { **default** | *list-name* }

Parameter Description

Parameter	Description
default	When this parameter is used, the following defined authentication method list is used as the default method for Login authentication.
list-name	Name of the user authentication method list, which could be any character strings
method	It must be one of the keywords: **local**, **none**, **group** and **subs**. One method list can contain up to four methods.
local	Uses the local user name database for authentication.
none	Does not perform authentication.
group	Uses the server group for authentication. At present, the RADIUS and TACACS+ server groups are supported.
subs	Uses the subs database for authentication.

Defaults N/A

Command Mode Global configuration mode

Usage Guide If the AAA Login authentication security service is enabled on the device, users must use AAA for Login authentication negotiation. You must use the **aaa authentication login** command to configure a default or optional method list for Login authentication.

The next method can be used for authentication only when the current method does not work.

You need to apply the configured Login authentication method to the terminal line which needs Login authentication. Otherwise, the configured Login authentication method is invalid.

Configuration The following example defines an AAA Login authentication method list named list-1. In the

Examples authentication method list, first the RADIUS security server is used for authentication. If the RADIUS security server does not respond, the local user database is used for authentication.

```
Ruijie(config)# aaa authentication login list-1 group radius local
```

Related Commands

Command	Description
aaa new-model	Enables the AAA security service.
login authentication	Applies the Login authentication method to the terminal lines.
username	Defines a local user database.

Platform Description N/A

1.8 aaa authentication ppp

Use this command to enable the AAA authentication for PPP user and configure the PPP user authentication method list.

Use the **no** form of this command to delete the authentication method list.

aaa authentication ppp { **default** | *list-name* } *method1* [*method2*...]

no aaa authentication ppp { **default** | *list-name* }

Parameter Description

Parameter	Description
default	When this parameter is used, the following defined authentication method list is used as the default method for PPP user authentication.
list-name	Name of the user authentication method list, which could be any character strings
method	It must be one of the keywords: **local**, **none group** and **subs**. One method list can contain up to four methods.
local	Uses the local user name database for authentication.
none	Does not perform authentication.
group	Uses the server group for authentication. At present, the RADIUS server group is supported.
subs	Uses the subs database for authentication.

Defaults N/A

Command Mode Global configuration mode

Usage Guide If the AAA PPP security service is enabled on the device, users must use AAA authentication for PPP negotiation. You must use the **aaa authentication ppp** command to configure a default or optional method list for PPP user authentication.

The next method can be used for authentication only when the current method does not work.

Configuration Examples The following example defines an AAA authentication method list named rds_ppp for PPP session. In the authentication method list, first the RADIUS security server is used for authentication. If the RADIUS security server does not respond, the local user database is used for authentication.

```
Ruijie(config)# aaa authentication ppp rds_ppp group radius local
```

Related Commands

Command	Description
aaa new-model	Enables the AAA security service.
ppp authentication	Associates a specific method list with the PPP user.
username	Defines a local user database.

Platform Description N/A

1.9 aaa authentication sslvpn

Use this command to enable AAA authentication for the SSL VPN user and configure the SSL VPN user authentication method list.

Use the **no** form of this command to delete the authentication method list.

aaa authentication sslvpn { **default** | *list-name* } *method1* [*method2...*]

no aaa authentication sslvpn { **default** | *list-name* }

Parameter Description

Parameter	Description
default	When this parameter is used, the following defined authentication method list is used as the default method for SSL VPN user authentication.
list-name	Name of SSL VPN user authentication method list, which could be any character strings
method	It must be one of the keywords: **local**, **none**, **subs** and **group**. One method list can contain up to four methods.
local	Use the local user name database for authentication.
none	Does not perform authentication.
group	Uses the server group for authentication. At present, the RADIUS server group is supported.
subs	Uses the subs database for authentication.

Defaults N/A

Command Mode Global configuration mode

Usage Guide If the SSL VPN security service is enabled on the device, users must use the AAA authentication for SSL VPN negotiation. You must use the **aaa authentication sslvpn** command to configure a default

or optional method list for user authentication.
The next method can be used for authentication only when the current method does not work.

Configuration Examples The following example defines an AAA authentication method list named **rds_sslvpn** for SSL VPN session. In the authentication method list, the RADIUS security server is first used for authentication. If the RADIUS security server does not respond, the local user database is used for authentication.

```
Ruijie(config)# aaa authentication sslvpn rds_sslvpn group radius local
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.10 aaa authorization commands

Use this command to authorize the command executed by the user who has logged in the NAS CLI.
Use the **no** form of this command to restore the default setting.
aaa authorization commands *level* { **default** | *list-name* } *method1* [*method2...*]
no aaa authorization commands *level* { **default** | *list-name* }

Parameter Description

Parameter	Description
level	Command level to be authorized in the range from 0 to 15
default	When this parameter is used, the following defined method list is used as the default method for command authorization.
list-name	Name of the user authorization method list, which could be any character strings
method	It must be one of the keywords: **none** and **group**. One method list can contain up to four methods.
none	Dose not perform authorization.
group	Uses the server group for authorization. At present, the TACACS+ server group is supported.

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide RGOS supports authorization of the commands executed by the users. When the users input and attempt to execute a command, AAA sends this command to the security server. This command is to be executed if the security server allows to. Otherwise, it will prompt command deny.
It is necessary to specify the command level when configuring the command authorization, and this specified command level is the default command level.
The configured command authorization method must be applied to terminal line which requires the

command authorization. Otherwise, the configured command authorization method is ineffective.

Configuration Examples The following example uses the TACACS+ server to authorize the level 15 command.

```
Ruijie(config)# aaa authorization commands 15 default group tacacs+
```

Related Commands

Command	Description
aaa new-model	Enables the AAA security service.
authorization commands	Applies the command authorization for the terminal line.

Platform Description N/A

1.11 aaa authorization config-commands

Use this command to authorize the configuration commands (including in the global configuration mode and its sub-mode). Use the **no** form of this command to resotre the default setting.

aaa authorization config-commands

no aaa authorization config-commands

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide If you only authorize the commands in the non-configuration mode (for example, privileged EXEC mode), you can use the **no** form of this command to disable the authorization function in the configuration mode, and execute the commands in the configuration mode and its sub-mode without command authorization.

Configuration Examples The following example enables the configuration command authorization function.

```
Ruijie(config)# aaa authorization config-commands
```

Related Commands

Command	Description
aaa new-model	Enables the AAA security service.
aaa authorization commands	Defines the AAA command authorization.

Platform Description N/A

1.12 aaa authorization console

Use this command to authorize the commands of the users who have logged in the console. Use the **no** form of this command to restore the default setting.

aaa authorization console

no aaa authorization console

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide RGOS supports to identify the users logged in from the console and from other terminals, configure whether to authorize the users logged in from the console or not. If the command authorization function is disabled on the console, the authorization method list applied to the console line is ineffective.

Configuration Examples The following example enables the aaa authorization console function.

```
Ruijie(config)# aaa authorization console
```

Related Commands

Command	Description
aaa new-model	Enables the AAA security service.
aaa authorization commands	Defines the AAA command authorization.
authorization commands	Applies the command authorization to the terminal line.

Platform Description N/A

1.13 aaa authorization exec

Use this command to authorize the users logged in the NAS CLI and assign the authority level. Use the **no** form of this command to restore the default setting.

aaa authorization exec { **default** | *list-name* } *method1* [*method2*...]

no aaa authorization exec { **default** | *list-name* }

Parameter Description

Parameter	Description
default	When this parameter is used, the following defined method list is used as the default method for Exec authorization.
list-name	Name of the user authorization method list, which could be any character strings

method	It must be one of the keywords listed in the following table. One method list can contain up to four methods.
local	Uses the local user name database for authorization.
none	Does not perform authorization.
group	Uses the server group for authorization. At present, the RADIUS server group is supported.

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide RGOS supports authorization of users logged in the NAS CLI and assignment of CLI authority level(0-15). The aaa authorization exec function is effective on condition that Login authentication function has been enabled. It can not enter the CLI if it fails to enable the aaa authorization exec. You must apply the exec authorization method to the terminal line; otherwise the configured method is ineffective.

Configuration Examples The following example uses the RADIUS server to authorize Exec.

```
Ruijie(config)# aaa authorization exec default group radius
```

Related Commands

Command	Description
aaa new-model	Enables the AAA security service.
authorization exec	Applies the command authorization to the terminal line.
username	Defines a local user database.

Platform Description N/A

1.14 aaa authorization network

Use this command to authorize the service requests (including such protocols as PPP and SLIP) from the users that access the network. Use the **no** form of this command to restore the default setting.

aaa authorization network { **default** | *list-name* } *method1* [*method2*...]

no aaa authorization network { **default** | *list-name* }

Parameter Description

Parameter	Description
default	When this parameter is used, the following defined method list is used as the default method for Network authorization.
method	It must be one of the keywords: **none** and **group**. One method list can contain up to four methods.
none	Does not perform authorization.
group	Uses the server group for authorization. At present, the RADIUS

	server group is supported.

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide RGOS supports authorization of all the service requests related to the network, such as PPP and SLIP. If authorization is configured, all the authenticated users or interfaces will be authorized automatically.
Three different authorization methods can be specified. Like authorization, the next method can be used for authorization only when the current authorization method does not work. If the current authorization method fails, other subsequent authorization method is not used.
The RADIUS server authorizes authenticated users by returning a series of attributes. Therefore, RADIUS authorization is based on RADIUS authorization. RADIUS authorization is performed only when the user passes the RADIUS authorization.

Configuration Examples The following example uses the RADIUS server to authorize network services.

```
Ruijie(config)# aaa authorization network default group radius
```

Related Commands

Command	Description
aaa new-model	Enables the AAA security service.
aaa accounting	Defines AAA accounting.
aaa authentication	Defines AAA authentication.
username	Defines a local user database.

Platform Description N/A

1.15 aaa command-author cache

Use this command to cache authorization results on the AAA module.
Use the **no** form of this command to restore the default setting.
aaa command-author cache
no aaa command-author cache

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, the AAA module does not cache authorization results.

Command Mode Global configuration mode

Usage Guide The AAA module caches authorization results returned from the server. Therefore, later authorizations at the same level can be operated based on the cached resources.
The cached authorization results, originating from specific levels of sessions and commands, can be applied only to sessions and commands at these levels.

Configuration Examples The following example enables the AAA module to cache authorization results.

```
Ruijie(config)# aaa command-author cache
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.16 aaa domain

Use this command to configure the domain attributes. Use the **no** form of this command to restore the default setting.
aaa domain { **default** | *domain-name* }
no aaa domain { **default |** *domain-name* }

Parameter Description

Parameter	Description
default	Uses this parameter to configure the default domain.
domain-name	The name of the specified domain

Defaults No domain is configured by default.

Command Mode Global configuration mode

Usage Guide Use this command to configure the domain-name–based AAA service. The **default** is to configure the default domain. That is the method list used by the network device if the users are without domain information. The *domain-name* is the specified domain name, if the users are with this domain name, the method lists associated with this domain are used. At present, the system can configure up to 32 domains.

Configuration Examples The following example configures the domain name.

```
Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)#
```

Related Commands

Command	Description
aaa new-model	Enables the AAA security service.
aaa domain enable	Enables the domain-name-based AAA service.

show aaa domain	Displays the domain configuration.

Platform Description N/A

1.17 aaa domain enable

Use this command to enable domain-name-based AAA service. Use the **no** form of this command to restore the default setting.

aaa domain enable

no aaa domain enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide To perform the domain-name-based AAA service configuration, enable this service.

Configuration Examples The following example enables the domain-name-based AAA service.

```
Ruijie(config)# aaa domain enable
```

Related Commands

Command	Description
aaa new-model	Enables the AAA security service.
show aaa doamain	Displays the domain configuration.

Platform Description N/A

1.18 aaa local authentication attempts

Use this command to set login attempt times.

aaa local authentication attempts *max-attempts*

Parameter Description

Parameter	Description
max-attempts	In the range from 0 to 2147483647

Defaults The default is 3.

Command Global configuration mode

Mode

Usage Guide Use this command to configure login attempt times. 0 indicates no time limit.

Configuration Examples The following example sets login attempt times to 6.

```
Ruijie #configure terminal
Ruijie (config)#aaa local authentication attempts 6
```

Related Commands

Command	Description
show running-config	Displays the current configuration of the switch.
show aaa lockout	Displays the lockout configuration parameter of current login.

Platform Description N/A

1.19 aaa local authentication lockout-time

Use this command to configure the lockout-time period when the login user has attempted for more than the limited times.

aaa local authentication lockout-time *lockout-time*

Parameter Description

Parameter	Description
lockout-time	In the range from 1 to 2147483647 in the unit of minutes

Defaults The default is 15 minutes.

Command Mode Global configuration mode

Usage Guide Use this command to configure the length of lockout-time when the login user has attempted for more than the limited times.

Configuration Examples The following example sets the lockout-time period to 5 minutes.

```
Ruijie#configure terminal
Ruijie(config)#aaa local authentication lockout-time 5
```

Related Commands

Command	Description
show running-config	Displays the current configuration of the switch.
show aaa lockout	Displays the lockout configuration parameter of current login.

Platform Description N/A

1.20 aaa log enable

Use this command to enable the system to print the syslog informing AAA authentication success. Use the **no** form of this command to disable the system to print the system informing AAA authentication success.

aaa log enable

no aaa log enable

Parameter Description	**Parameter**	**Description**
	N/A	N/A

Defaults This function is enabled by default.

Command Mode Global configuration mode

Usage Guide Use this command to enable the system to print the syslog informing aaa authentication success.

Configuration Examples The following example disables the system to print the syslog informing aaa authentication success.

```
Ruijie(config)# no aaa log enable
```

Related Commands	**Command**	**Description**
	N/A	N/A

Platform Description N/A

1.21 aaa log rate-limit

Use this command to set the rate of printing the syslog informing AAA authentication success. Use the **no** form of this command to restore the default printing rate.

aaa log rate-limit *num*

no aaa log rate-limit

Parameter Description	**Parameter**	**Description**
	num	The number of syslog entries printed per second. The range is from 0 to 65,535. 0 indicates the printing rate is not limited. The default is 5.

Defaults The default is 5.

Command Global configuration mode

Mode

Usage Guide N/A

Configuration Examples The following example sets the rate of printing the syslog informing AAA authentication success to 10.

```
Ruijie(config)# aaa log rate-limit 10
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.22 aaa new-model

Use this command to enable the RGOS AAA security service. Use the **no** form of this command to restore the default setting.

aaa new-model

no aaa new-model

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide Use this command to enable AAA. If AAA is not enabled, none of the AAA commands can be configured.

Configuration Examples The following example enables the AAA security service.

```
Ruijie(config)# aaa new-model
```

Related Commands

Command	Description
aaa authentication	Defines a user authentication method list.
aaa authorization	Defines a user authorization method list.
aaa accounting	Defines a user accounting method list.

Platform Description N/A

1.23 aaa slave-login allow

Use this command to turn on the login switch for the AAA slave device.

Use the **no** form of this command to turn off the login switch..

aaa slave-login allow

no aaa slave-login allow

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, the switch is off, so the slave device is not allowed to login.

Command Mode Domain configuration mode

Usage Guide When the switch is turned on, the slave device is allowed to login; otherwise, the slave device cannot login.

The configuration remains valid unless a change is made.

Configuration Examples The following example turns on the login switch for the AAA slave device.

```
Ruijie(config)# aaa slave-login allow
```

Related Commands

Command	Description
N/A	N/A

Platform Description This command is supported on switches.

1.24 accounting

Use this command to configure the Commands, EXEC, or Network accounting list.

Use the **no** form of this command to restore the default setting.

accounting {commands | exec | network} { **default |** *list-name* }

no accounting {commands | exec | network }

Parameter Description

Parameter	Description
default	Uses this parameter to specify the default method list.
list-name	The name of the network accounting list
commands	Uses this parameter to specify the Commands method list.
exec	Uses this parameter to specify the EXEC method list.
network	Uses this parameter to specify the Network method list.

Defaults With no method list specified, if the user sends the request, the device will attempt to specify the default method list for the user.

Command Mode Domain configuration mode

Usage Guide Use this command to configure the Commands, EXEC, or Network accounting method list for the specified domain.

Configuration Examples The following example sets an accounting method list for the specified domain.

```
Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)# accounting network default
Ruijie(config-aaa-domain)# accounting exec default
Ruijie(config-aaa-domain)# accounting commands default
```

Related Commands

Command	Description
aaa new-model	Enables the AAA security service.
aaa domain enable	Enables the domain-name-based AAA service.
show aaa domain	Displays the domain configuration.

Platform Description N/A

1.25 authentication

Use this command to configure the IEEE802.1x, login, or enable authentication list.
Use the **no** form of this command to restore the default setting.
authentication { login | enable} { **default** | *list-name* }
no authentication { login | enable}

Parameter Description

Parameter	Description
default	Uses this parameter to specify the default method list
list-name	The name of the specified method list
login	Uses this parameter to configure the login authentication list.
enable	Uses this parameter to configure the enable authentication list.

Defaults With no method list specified, if users send the request, the device will attempt to specify the default method list for users.

Command Mode Domain configuration mode

Usage Guide Specify an authentication method list for the domain.

Configuration Examples The following example sets an Enable authentication method list for the specified domain.

```
Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)# authentication enable default
```

Related Commands

Command	Description
aaa new-model	Enables the AAA security service.
aaa domain enable	Enables the domain-name-based AAA service.
show aaa domain	Displays the domain configuration.

Platform Description N/A

1.26 authorization

Use this command to configure the Commands, EXEC, or Network authorization list.

Use the **no** form of this command to restore the default setting.

authorization { commands | exec | network } { **default** | *list-name* }

no authorization { commands | exec | network }

Parameter Description

Parameter	Description
default	Uses this parameter to specify the default method list.
list-name	The name of the specified method list
commands	Uses this parameter to specify the Commands method list.
exec	Uses this parameter to specify the EXEC method list.
network	Uses this parameter to specify the Network method list.

Defaults With no method list specified, if users send the request, the device will attempt to specify the default method list for users.

Command Mode Domain configuration mode

Usage Guide Specify an authorization method list for the domain.

Configuration Examples The following example sets an authorization method list for the specified domain.

```
Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)# authorization network default
Ruijie(config-aaa-domain)# authorization exec default
Ruijie(config-aaa-domain)# authorization commands default
```

Related Commands

Command	Description
aaa new-model	Enables the AAA security service.
aaa domain enable	Enables the domain-name-based AAA service.

show aaa domain	Displays the domain configuration.

Platform Description N/A

1.27 clear aaa local user lockout

Use this command to clear the lockout user list.

clear aaa local user lockout { **all | user-name** *word* }

Parameter Description

Parameter	Description
all	Indicates all locked users.
user-name *word*	Indicates the ID of the locked User.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Use this command to clear all the user lists or a specified user list.

Configuration Examples The following example clears the lockout user list.

```
Ruijie(config)# clear aaa local user lockout all
```

Related Commands

Command	Description
show running-config	Displays the current configuration of the switch.
show aaa lockout	Displays the lockout configuration parameter of current login.

Platform Description N/A

1.28 show aaa accounting update

Use this command to display the accounting update information.

show aaa accounting update

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode/ Global configuration mode/ Interface configuration mode

Usage Guide Use this command to display the accounting update interval and whether the accounting update is enabled.

Configuration Examples The following example displays the accounting update information.

```
Ruijie# show aaa accounting update
```

Related Commands

Command	Description
aaa new-model	Enables the AAA security service.
aaa domain enable	Enables the domain-name-based AAA service.

Platform Description N/A

1.29 show aaa domain

Use this command to display all current domain information.

show aaa domain [**default** | *domain-name*]

Parameter Description

Parameter	Description
default	Displays the default domain.
domain-name	Displays the specified domain.

Defaults N/A

Command Mode Privileged EXEC mode/ Global configuration mode/ Interface configuration mode

Usage Guide If no domain-name is specified, all domain information will be displayed.

Configuration Examples The following example displays the domain named domain.com.

```
Ruijie(config)# show aaa domain domain.com
=============Domain domain.com=============
State: Active
Username format: Without-domain
Access limit: No limit
802.1X Access statistic: 0

Selected method list:
 authentication dot1x default
```

Related

Command	Description

Commands		
	aaa new-model	Enables the AAA security service.
	aaa domain enable	Enables the domain-name-based AAA service.

Platform Description N/A

1.30 show aaa lockout

Use this command to display the lockout configuration.

show aaa lockout

Parameter Description	Parameter	Description
	N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode/ Global configuration mode/ Interface configuration mode

Usage Guide Use this command to display the lockout configuration.

Configuration Examples The following example displays the lockout configuration.

```
Ruijie# show aaa lockout
Lock tries:   3
Lock timeout:  15 minutes
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

1.31 show aaa group

Use this command to display all the server groups configured for AAA.

show aaa group

Parameter Description	Parameter	Description
	N/A	N/A

Defaults N/A

Command Privileged EXEC mode/ Global configuration mode/ Interface configuration mode

Mode

Usage Guide N/A

Configuration Examples The following command displays all the server groups.

```
Ruijie# show aaa group
Type      Reference  Name
---------- ---------- ----------
radius    1         radius
tacacs+   1         tacacs+
radius    1         dot1x_group
radius    1         login_group
radius    1         enable_group
```

Related Commands

Command	Description
aaa group server	Configures the AAA server group.

Platform Description N/A

1.32 show aaa method-list

Use this command to display all AAA method lists.

show aaa method-list

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode/ Global configuration mode/ Interface configuration mode

Usage Guide Use this command to display all AAA method lists.

Configuration Examples The following example displays the AAA method list.

```
Ruijie# show aaa method-list
Authentication method-list
aaa authentication login default group radius
aaa authentication ppp default group radius
aaa authentication dot1x default group radius
aaa authentication dot1x san-f local  group angel group rain none
aaa authentication enable default group radius
Accounting method-list
```

```
aaa accounting network default start-stop group radius
Authorization method-list
aaa authorizating network default group radius
```

Related Commands

Command	Description
aaa authentication	Defines a user authentication method list
aaa authorization	Defines a user authorization method list
aaa accounting	Defines a user accounting method list

Platform Description N/A

1.33 show aaa user

Use this command to display AAA user information.

show aaa user { all | lockout | by-id *session-id* **| by-name** *user-name* **}**

Parameter Description

Parameter	Description
all	Displays all AAA user information.
lockout	Displays the locked AAA user information.
by-id session-id	Displays the information of the AAA user that with a specified session ID.
by-name user-name	Displays the information of the AAA user with a specified user name.

Defaults N/A

Command Mode Privileged EXEC mode/ Global configuration mode/ Interface configuration mode

Usage Guide Use this command to display AAA user information.

Configuration Examples The following example displays AAA user information.

```
Ruijie#show aaa user all
------------------------------
      Id ----- Name
 2345687901     wwxy
------------------------------
Ruijie# show aaa user by-id 2345687901
------------------------------
      Id ----- Name
 2345687901     wwxy
Ruijie# show aaa user by-name wwxy
------------------------------
```

```
       Id ----- Name
 2345687901     wwxy
------------------------------


Ruijie# show aaa user lockout

Name                          Tries     Lock      Timeout(min)
------------------------------- ---------- ---------- ------------
Ruijie#
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

1.34 state

Use this command to set whether the configured domain is valid. Use the **no** form of this command to restore the default setting.

state { **block | active** }

no state

Parameter Description	Parameter	Description
	block	The configured domain is invalid.
	active	The configured domain is valid.

Defaults The default is active.

Command Mode Domain configuration mode

Usage Guide Use this command to set whether the specified configured domain is valid.

Configuration Examples The following example sets the configured domain to be invalid.

```
Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)# state block
```

Related Commands	Command	Description
	aaa new-model	Enables the AAA security service.
	aaa domain enable	Enables the domain-name-based AAA service.
	show aaa domain enable	Displays the domain configuration.

Platform Description N/A

1.35 username-format

Use this command to configure the user name whether to be with the domain information when the NAS interacts with the servers. Use the **no** form of this command to restore the default setting.

username-format { **without-domain** | **with-domain** }

no username-format

Parameter Description

Parameter	Description
without-domain	Sets the user name without the domain information.
with-domain	Sets the user name with the domain information.

Defaults The default is without-domain.

Command Mode Domain configuration mode

Usage Guide Use this command to configure the user name whether to be with the domain information when the NAS interacts with the servers.

Configuration Examples The following example sets the user name without the domain information.

```
Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)# username-domain without-domain
```

Related Commands

Command	Description
aaa new-model	Enables the AAA security service.
aaa domain enable	Enables the domain-name-based AAA service.
show aaa domain	Displays the domain configuration.

Platform Description N/A

2 RADIUS Commands

2.1 aaa group server radius

Use this command to enter AAA server group configuration mode. Use the **no** form of this command to restore the default setting.

aaa group server radius *name*

no aaa group server radius *name*

Parameter Description

Parameter	Description
name	Server group name. Keywords “radius” and “tacacs +” are excluded as they are the default RADIUS and TACACS+ server group names.

Defaults N/A

Command Mode Global configuration mode

Usage Guide This command is used to configure a RADIUS AAA server group.

Configuration Examples The following example configures a RADIUS AAA server group named ss.

```
Ruijie(config)# aaa group server radius ss
Ruijie(config-gs-radius)# end
Ruijie# show aaa group
Type      Reference  Name
---------- ---------- ----------
radius    1          radius
tacacs+   1          tacacs+
radius     1           ss
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.2 ip radius source-interface

Use this command to specify the source IP address for the RADIUS packets. Use the **no** form of this command to delete the source IP address for the RADIUS packet.

ip radius source-interface *interface*
no radius source-interface

Parameter Description

Parameter	Description
interface	Interface that the source IP address of the RADIUS packet belongs to.

Defaults The source IP address of the RADIUS packet is set by the network layer.

Command mode Global configuration mode

Usage Guide In order to reduce the NAS information to be maintained on the RADIUS server, use this command to set the source IP address of the RADIUS packet. This command uses the first IP address of the specified interface as the source IP address of the RADIUS packet. This command is used in the layer 3 devices.

Configuration Examples The following example specifies that the RADIUS packet obtains an IP address from the fastEthernet 0/0 interface and uses it as the source IP address of the RADIUS packet.

```
Ruijie(config)# ip radius source-interface fastEthernet 0/0
```

Related Commands

Command	Description
radius-server host	Defines the RADIUS server.
ip address	Configures the IP address of the interface.

Platform Description N/A

2.3 ip oob

Use this command to specify the MGMT port used in the TACACS+ server group.
Use the **no** form of this command to restore the default setting.
ip oob [**via** *mgmt_name*]
no ip oob

Parameter Description

Parameter	Description
mgmt_name	MGMT port name

Defaults N/A

Command TACACS+ server group configuration mode

Mode

Usage Guide Use the **aaa group server tacacs+** command to enter TACACS+ server group configuration mode. If no port is specified as the MGMT port. MGMT Port 0 is default.

Configuration Examples The following example specifies MGMT port 1 used in the TACACS+ server group.

```
Ruijie(config)# aaa group server radius ss
Ruijie(config-gs-radius)# server 192.168.4.14
Ruijie(config-gs-radius)# server 192.168.4.15
Ruijie(config-gs-radius)# ip oob via mgmt 1
Ruijie(config-gs-radius)# end
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.4 ip vrf forwarding

Use this command to select a VRF for the AAA server group. Use the **no** form of this command to restore the default setting.

ip vrf forwarding *vrf_name*

no ip vrf forwarding

Parameter Description

Parameter	Description
vrf_name	VRF name.

Defaults N/A

Command Mode Server group configuration mode

Usage Guide This command is used to select a VRF for the specified server.

Configuration Examples The following example selects the VRF named vrf_name for AAA server group ss.

```
Ruijie(config)# aaa group server radius ss
Ruijie(config-gs-radius)# server 192.168.4.12
Ruijie(config-gs-radius)# server 192.168.4.13
Ruijie(config-gs-radius)# ip vrf forwarding vrf_name
Ruijie(config-gs-radius)# end
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

2.5 radius vendor-specific extend

Use this command to extend RADIUS not to differentiate the IDs of private vendors. Use the **no** form of this command to restore the default setting.

radius vendor-specific extend

no radius vendor-specific extend

Parameter Description	Parameter	Description
	N/A	N/A

Defaults Only the private vendor IDs of Ruijie are recognized.

Command Mode Global configuration mode

Usage Guide This command is used to identify the attributes of all vendor IDs by type.

Configuration Examples The following example extends RADIUS so as not to differentiate the IDs of private vendors:

```
Ruijie(config)# radius vendor-specific extend
```

Related Commands	Command	Description
	radius attribute	Configures vendor type.
	radius set qos cos	Sets the qos value sent by the RADIUS server as the cos value of the interface.

Platform Description N/A

2.6 radius-server account update retransmit

Use this command to configure accounting update packet retransmission for the authentication user. Use the **no** form of this command to restore the default setting,

radius-server account update retransmit

no radius-server account update retransmit

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide This command is used to configure accounting update packet retransmission for the second generation Web authentication user exclusively.

Configuration Examples The following example configures accounting update packet retransmission for the second generation Web authentication user.

```
Ruijie(config)#radius-server account update retransmit
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.7 radius-server attribute 31

Use this command to specify the MAC-based format of RADIUS Calling-Station-ID attribute in global configuration mode. Use the **no** form of this command to restore the default setting.

radius-server attribute 31 mac format { **ietf** | **normal** | **unformatted** }

no radius-server attribute 31 mac format

Parameter Description

Parameter	Description
ietf	The standard format specified by the IETF RFC3580 . '-'is used as the separator, for example: 00-D0-F8-33-22-AC.
normal	Normal format representing the MAC address. ;.'is used as the separator. For example: 00d0.f833.22ac.
unformatted	No format and separator. By default, unformatted is used. For example: 00d0f83322ac.

Defaults The default format is unformatted.

Command Mode Global configuration mode

Usage Guide Some RADIUS security servers (mainly used to 802.1x authentication) may identify the IETF format only. In this case, the RADIUS Calling-Station-ID attribute shall be set as the IETF format type.

Configuration Examples The following example defines the RADIUS Calling-Station-ID attribute as IETF format.

```
Ruijie(config)# radius-server attribute 31 mac format ietf
```

Related Commands

Command	Description
radius-server host	Defines the RADIUS server.

Platform Description N/A

2.8 radius-server dead-ctriteria

Use this command to configure criteria on a device to determine that the Radius server is unreachable. Use the no form of this command to restore the default setting.

radius-server dead-criteria { **time** ***seconds*** [**tries** ***number***] **| tries** *number* }

no radius-server dead-criteria { **time** ***seconds*** [**tries** ***number***] **| tries** *number* }

Parameter Description

Parameter	Description
time *seconds*	Configures the timeout value. If the device does not receive a correct response packet from the Radius server within the specified time, the Radius server is considered to be unreachable. The value is in the range from 1 to 120 in the unit of seconds.
tries *number*	Configures the successive timeout times. When sending a request from the device to the Radius server times out for the specified times, the device considers that the Radius server is unreachable. The value is in the range from 1 to 100 in the unit of seconds.

Defaults The default **time** *seconds* is 60 and **tries** *number* is 10.

Command Mode Global configuration mode

Usage Guide If a Radius server meets the timeout and timeout times at the same time, it is considered to be unreachable. This command is used to adjust the parameter conditions of timeout and timeout times.

Configuration Examples The following example sets the timeout to 120 seconds and timeout times to 20.

```
Ruijie(config)# radius-server dead-criteria time 120 tries 20
```

Related

Command	Description

Commands

radius-server host	Defines the RADIUS security server.
radius-server deadtime	Defines the duration when a device stops sending any requests to an unreachable Radius server.
radius-server timeout	Defines the timeout for the packet re-transmission.

Platform Description N/A

2.9 radius-server deadtime

Use this command to configure the duration when a device stops sending any requests to an unreachable Radius server. Use the **no** form of this command to restore the default setting.

radius-server deadtime *minnutes*

no radius-server deadtime

Parameter Description

Parameter	Description
minutes	Defines the duration in minutes when the device stops sending any requests to the unreachable Radius server. The value is in the range from 1 to 1440 in the unit of minutes.

Defaults The default value of minutes is 0, that is, the device keeps sending requests to the unreachable Radius server.

Command Mode Global configuration mode.

Usage Guide If active Radius server detection is enabled on the device, the time parameter of this command does not take effect on the Radius server. Otherwise, the Radius server becomes reachable when the duration set by this command is shorter than the unreachable time..

Configuration Examples The following example sets the duration when the device stops sending requests to 1 minute.

```
Ruijie(config)# radius-server deadtime 1
```

Related Commands

Command	Description
radius-server host	Defines the RADIUS security server.
radius-server dead-criteria	Defines the criteria to determine that a Radius server is unreachable.

Platform Description N/A

2.10 radius-server host

Use this command to specify a RADIUS security server host. Use the **no** form of this command to restore the default setting.

radius-server host [**oob**] [**via** *mgmt-name*] { *ipv4-address* } [**auth-port** *port-number*] [**acct-port** *port-number*] [**test username** *name* [**idle-time** *time*] [**ignore-auth-port**] [**ignore-acct-port**]] [**key** [**0** | **7**] *text-string*]

no radius-server host { *ipv4-address* }

Parameter Description

Parameter	Description
oob [**via** *mgmt-name*]	Specifies an MGMT port as the source port for TACACS+ communication.
ipv4-address	IPv6 address of the RADIUS security server host.
auth-port	UDP port used for RADIUS authentication.
port-number	Number of the UDP port used for RADIUS authentication. If it is set to 0, this host does not perform authentication.
acct-port	UDP port used for RADIUS accounting.
port-number	Number of the UDP port used for RADIUS accounting. If it is set to 0, this host does not perform accounting.
test username *name*	(Optional) Enables the active detection to the RADIUS security server and specify the username used by the active detection.
idle-time *time*	(Optional) Sets the interval of sending the test packets to the reachable RADIUS security server, which is 60 minutes by default and in the range of 1 to 1440 minutes (namely 24 hours).
ignore-auth-port	(Optional) Disables the detection to the authentication port on the RADIUS security server. It is enabled by default.
ignore-acct-port	(Optional) Disables the detection to the authentication port on the RADIUS security server. It is enabled by default.
key [**0** | **7**] *text-string*	Configure a shared key for the server. The type of encryption can be specified. 0 is no encryption and 7 is simple encryption. The default is 0.

Defaults No RADIUS host is specified by default.

Command Mode Global configuration mode

Usage Guide In order to implement the AAA security service using RADIUS, you must define a RADIUS security server. You can define one or more RADIUS security servers using the **radius-server host**

command.

Configuration Examples The following example defines a RADIUS security server host:

```
Ruijie(config)# radius-server host 192.168.12.1
```

The following example defines a RADIUS security server host in the IPv4 environment, enable the active detection with the detection interval 60 minutes and disable the accounting UDP port detection:

```
Ruijie(config)# radius-server host 192.168.100.1 test username viven idle-time 60 ignore-acct-port
```

Related Commands

Command	Description
aaa authentication	Defines the AAA authentication method list
radius-server key	Defines a shared password for the RADIUS security server.
radius-server retransmit	Defines the number of RADIUS packet retransmissions.

Platform Description N/A

2.11 radius-server key

Use this command to define a shared password for the network access server (device) to communicate with the RADIUS security server. Use the **no** form of this command to restore the default setting.

radius-server key [**0 | 7**] *text-string*

no radius-server key

Parameter Description

Parameter	Description
text-string	Text of the shared password
***0	7***	Password encryption type. 0: no encryption; 7: Simply-encrypted.

Defaults No shared password is specified by default.

Command Mode Global configuration mode.

Usage Guide A shared password is the basis for communications between the device and the RADIUS security server. In order to allow the device to communicate with the RADIUS security server, you must define the same shared password on the device and the RADIUS security server.

Configuration Examples The following example defines the shared password **aaa** for the RADIUS security server:

```
Ruijie(config)# radius-server key aaa
```

Related Commands

Command	Description
radius-server host	Defines the RADIUS security server.
radius-server retransmit	Defines the number of RADIUS packet retransmissions.
radius-server timeout	Defines the timeout for the RADIUS packet.

Platform Description N/A

2.12 radius-server retransmit

Use this command to configure the number of packet retransmissions before the device considers that the RADIUS security server does not respond. Use the **no** form of this command to restore the default setting.

radius-server retransmit *retries*

no radius-server retransmit

Parameter Description

Parameter	Description
retries	Number of retransmissions

Defaults The default is 3.

Command Mode Global configuration mode.

Usage Guide AAA uses the next method to authenticate users only when the current security server for authentication does not respond. When the device retransmits the RADIUS packet for the specified times and the interval between every two retries is timeout, the device considers that the security sever does not respond.

Configuration Examples The following example sets the number of retransmissions to 4:

```
Ruijie(config)# radius-server retransmit 4
```

Related Commands

Command	Description
radius-server host	Defines the RADIUS security server.
radius-server key	Defines a shared password for the RADIUS

	server.
radius-server timeout	Defines the timeout for the RADIUS packet.

Platform Description N/A

2.13 radius-server source-port

Use this command to configure the source port to send RADIUS packets. Use the **no** form of this command to restore the default setting.

radius-server source-port *port*

no radius-server source-port

Parameter Description

Parameter	Description
port	The port number, in the range from 0 to 65535.

Defaults The default is a random number.

Command Mode Global configuration mode

Usage Guide The source port is random by default. This command is used to specify a source port.

Configuration Examples The following example configures source port 10000 to send RADIUS packets.

```
Ruijie(config)# radius-server source-port 10000
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.14 radius-server timeout

Use this command to set the time for the device to wait for a response from the security server after retransmitting the RADIUS packet. Use the **no** form of this command to restore the default setting.

radius-server timeout *seconds*

no radius-server timeout

Parameter Description

Parameter	Description

seconds	Timeout in the range from 1 to 1000 in the unit of seconds.

Defaults The default is five.

Command Mode Global configuration mode

Usage Guide This command is used to change the timeout of packet retransmission.

Configuration Examples The following example sets the timeout to 10 seconds.

```
Ruijie(config)# radius-server timeout  10
```

Related Commands

Command	Description
radius-server host	Defines the RADIUS security server.
radius-server retransmit	Defines the number of the RADIUS packet retransmissions.
radius-server key	Defines a shared password for the RADIUS server.

Platform Description N/A

2.15 radius set qos cos

Use this command to set the qos value sent by the RADIUS server as the cos value of the interface. Use the **no** form of this command to restore the default setting.

radius set qos cos

no radius set qos cos

Parameter Description

Parameter	Description
N/A	N/A

Defaults Set the qos value sent by the RADIUS server as the dscp value.

Command Mode Global configuration mode.

Usage Guide This command is used to set the qos value sent by the RADIUS server as the cos value, and the dscp value by default.

Configuration Examples The following example sets the qos value sent by the RADIUS server as the cos value of the interface:

```
Ruijie(config)# radius set qos cos
```

Related Commands

Command	Description
radius vendor-specific extend	Extends RADIUS as as not to differentiate the IDs of private vendors.

Platform Description N/A

2.16 radius support cui

Use this command to enable RADIUS to support the cui function. Use the **no** form of this command to restore the default setting.

radius support cui

no radius support cui

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide This command is used to enable RADIUS to support the cui function.

Configuration Examples The following example enables RADIUS to support the cui function.

```
Ruijie(config)# radius support cui
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.17 server auth-port acct-port

Use this command to add the server of the AAA server group. Use the **no** form of this command to restore the default setting.

server { *ipv4-addr* } [**auth-port** *port1*] [**acct-port** *port2*]

no server { *ipv4-addr* } [**auth-port** *port1*] [**acct-port** *port2*]

Parameter Description

Parameter	Description
ip-addr	Server IP address
port1	Server authentication port
port2	Server accounting port

Defaults No server is configured by default.

Command Mode Server group configuration mode

Usage Guide N/A

Configuration Examples The following example adds server 192.168.4.12 to server group ss and sets the accounting port and authentication port to 5 and 6 respectively.

```
Ruijie(config)# aaa group server radius ss
Ruijie(config-gs-radius)# server 192.168.4.12 acct-port 5 auth-port 6
Ruijie(config-gs-radius)# end
Ruijie# show aaa group
Type      Reference  Name
---------- ---------- ----------
radius    1          radius
tacacs+   1          tacacs+
radius    1          ss
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.18 show radius acct statistics

Use this command to display RADIUS accounting statistics.

show radius acct statistics

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Global configuration mode/privileged EXEC mode/interface configuration mode

Usage Guide N/A

Configuration Examples The following example displays RADIUS accounting statistics.

```
Ruijie#show radius acct statistics
Accounting Servers:

Server Index..................................... 1
Server Address................................... 192.168.1.1
Server Port...................................... 1813
Msg Round Trip Time.............................. 0 (msec)
First Requests................................... 1
Retry Requests................................... 1
Accounting Responses............................. 0
Malformed Msgs................................... 0
Bad Authenticator Msgs........................... 0
Pending Requests........
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.19 show radius auth statistics

Use this command to display RADIUS authentication statistics.

show radius auth statistics

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Global configuration mode/privileged EXEC mode/interface configuration mode

Usage Guide N/A

Configuration Examples The following example displays RADIUS authentication statistics.

```
Ruijie#show radius auth statistics
Authentication Servers:

Server Index..................................... 1
Server Address................................... 192.168.1.1
Server Port...................................... 1812
Msg Round Trip Time.............................. 0 (msec)
First Requests................................... 0
Retry Requests................................... 0
Accept Responses................................. 0
Reject Responses................................. 0
Challenge Responses.............................. 0
Malformed Msgs................................... 0
Bad Authenticator Msgs........................... 0
Pending Requests................................. 0
Timeout Requests................................. 0
Unknowntype Msgs................................. 0
Other Drops...................................... 0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.20 show radius group

Use this command to display RADIUS server group configuration.

show radius group

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Global configuration mode/privileged EXEC mode/interface configuration mode

Usage Guide N/A

Configuration The following example displays RADIUS server group configuration.

Examples

```
Ruijie#show radius group
==========Radius group radius==========
Vrf:not-set
Server:192.168.1.1
  Server key:ruijie
  Authentication port:1812
  Accounting port:1813
  State:Active
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.21 show radius parameter

Use this command to display global RADIUS server parameters.

show radius parameter

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Global configuration mode/privileged EXEC mode/interface configuration mode

Usage Guide N/A

Configuration Examples The following example displays global RADIUS server parameters.

```
Ruijie# show radius parameter
Server Timout:   5 Seconds
Server Deadtime: 0 Minutes
Server Retries:  3
Server Dead Critera:
Time:       10 Seconds
Tries:        10
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.22 show radius server

Use this command to display the configuration of the RADIUS server.

show radius server

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the configuration of the RADIUS server.

```
Ruijie# show radius server
erver IP:   192.168.4.12
Accounting  Port:  23
Authen  Port:    77
Test Username:   viven
Test Idle Time:   10 Minutes
Test Ports:       Authen
Server State:    Active
   Current duration 765s, previous duration 0s
Dead: total time 0s, count 0
Statistics:
Authen: request 15, timeouts 1
Author: request 0, timeouts 0
Account: request 0, timeouts 0

Server IP:   192.168.4.13
Accounting Port:  45
Authen  Port:    74
Test Username:   <Not Configured>
Test Idle Time:   60 Minutes
Test Ports:       Authen and Accounting
Server State:    Active
Current duration 765s, previous duration 0s
```

```
Dead: total time 0s, count 0
Statistics:
Authen: request 0, timeouts 0
Author: request 0, timeouts 0
Account: request 20, timeouts 0
```

Related Commands

Command	Description
radius-server host	Defines the RADIUS security server.
radius-server retransmit	Defines the number of RADIUS packet retransmissions.
radius-server key	Defines a shared password for the RADIUS server.
radius-server timeout	Defines the packet transmission timeout.

Platform Description N/A

2.23 show radius vendor-specific

Use this command to display the configuration of the private vendors.

show radius vendor-specific

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the configuration of the private vendors.

```
Ruijie#show radius vendor-specific
id    vendor-specific     type-value
----- -------------------- ----------
1     max-down-rate       1
2     port-priority       2
3     user-ip            3
4     vlan-id            4
5     last-supplicant-vers 5
      ion
```

```
6    net-ip             6
7    user-name          7
8    password           8
9    file-directory      9
10   file-count         10
11   file-name-0        11
12   file-name-1        12
13   file-name-2        13
14   file-name-3        14
15   file-name-4        15
16   max-up-rate        16
17   current-supplicant-v 17
     ersion
18   flux-max-high32     18
19   flux-max-low32      19
20   proxy-avoid        20
21   dialup-avoid        21
22   ip-privilege        22
23   login-privilege     42
27   ipv4-multicast-addre 87
     ss
```

Related Commands

Command	Description
radius-server host	Defines the RADIUS security server.
radius-server retransmit	Defines the number of RADIUS packet retransmissions.
radius-server key	Defines a shared password for the RADIUS server.
radius-server timeout	Defines the packet transmission timeout.

Platform Description N/A

3 TACACS+ Commands

3.1 aaa group server tacacs+

Use this command to configure different groups of TACACS+ server hosts. Use the **no** form of this command to remove a specified TACACS server group.

aaa group server tacacs+ *group_name*

no aaa group server tacacs+ *group_name*

Parameter Description

Parameter	Description
group_name	TACACS+ server group name, which cannot be **radius** or **tacacs+** The two names are the built-in group name.

Defaults No TACACS+ server group is configured.

Command Mode Global configuration mode

Usage Guide After you group different TACACS+ servers, the tasks of authentication, authorization and accounting can be implemented by different server groups.

Configuration Examples The following example configures a TACACS+ server group named tac1, and configures a TACACS+ server with IP address 1.1.1.1 in this group:

```
Ruijie(config)#aaa group server tacacs+ tac1
Ruijie(config-gs-tacacs+)# server 1.1.1.1
```

Related Commands

Command	Description
server	Configures server list of TACACS+ server group.
ip vrf forwarding	Configures VRF name supported by TACACS+ server group.

Platform Description N/A

3.2 ip tacacs source-interface

Use this command to use the IP address of a specified interface for all outgoing TACACS+ packets. Use the **no** form of this command to disable use of the specified interface IP address.

ip tacacs source-interface *interface*
no ip tacacs source-interface

Parameter Description

Parameter	Description
interface	Interface for the outgoing TACACS+ packets

Defaults The source IP address of TACACS+ packets is set on the network layer.

Command Mode Global configuration mode

Usage Guide To decrease the work of maintaining massive NAS messages in TACACS+ server, use this command to use the IP address of a specified interface for all outgoing TACACS+ packets.
This command specifies the primary IP address of the specified interface as the source address of TACACS+ packets on Layer 3 devices. If the specified interface is in a VRF instance, the route of this VRF instance is used for packet transmission.

Configuration Examples The following example specifies the IP address of GigabitEthernet 0/0 for the outgoing TACACS+ packets.

```
Ruijie(config)# ip tacacs source-interface gigabitEthernet 0/0
```

Related Commands

Command	Description
tacacs-server host	Defines a TACACS+ server.
ip address	Configures the IP address of an interface.

Platform Description N/A

3.3 ip oob

Use this command to specify the MGMT port used in the TACACS+ server group.
Use the **no** form of this command to restore the default setting.
ip oob [**via** *mgmt_name*]
no ip oob

Parameter Description

Parameter	Description
mgmt_name	MGMT port name

Defaults N/A

Command TACACS+ server group configuration mode

Mode

Usage Guide Use the **aaa group server tacacs+** command to enter TACACS+ server group configuration mode. No MGMT port is specified by default.

Configuration Examples The following example specifies MGMT port 1 used in the TACACS+ server group.

```
Ruijie(config)# aaa group server tacacs+ ss
Ruijie(config-gs-tacacs+)# server 1.1.1.1
Ruijie(config-gs-tacacs+)# ip oob via mgmt 1
```

Platform Description N/A

3.4 ip vrf forwarding

Use this command to configure the VRF used in the TACACS+ server group. Use the **no** form of this command to remove the VRF configuration from the TACACS+ server group.

ip vrf forwarding *vrf-name*

no ip vrf forwarding

Parameter Description

Parameter	Description
vrf-name	VRF name

Defaults N/A

Command Mode TACACS+ server group configuration mode

Usage Guide Before you configure this command, you need to use the **aaa group server tacacs+** command to enter TACACS+ server group configuration mode.

The VRF instance must exist and be configured with a correct VRF name through the **vrf definition** command.

Configuration Examples The following example specifies the VRF instance named vpn1 for the TACACS+ server group:

```
Ruijie(config)# aaa group server tacacs+ tac1
Ruijie(config-gs-tacacs+)# server 1.1.1.1
Ruijie(config-gs-tacacs+)# ip vrf forwarding vpn1
```

Related Commands

Command	Description
aaa group server tacacs+	Configures the TACACS+ server group.
server	Configures a server list of TACACS+ server group.

Platform Description N/A

3.5 nas-ip

Use this command to configure the source IP address of the TACACS+ packets sent from the TACACS+ server group.

Use the **no** form of this command to remove the source IP address.

nas-ip {*ipv4-address* | *ipv6-address*}

no nas-ip {*ipv4-address* | *ipv6-address*}

Parameter Description

Parameter	Description
ipv4-address	Specifies a source IPv4 address for the TACACS+ packets.
ipv6-address	Specifies a source IPv6 address for the TACACS+ packets.

Defaults No source IP address is configured by default.

Command Mode TACACS+ server group configuration mode

Usage Guide You must configure the **aaa group server tacacs+** command before configuring this command.

Configuration Examples The following example configures a TACACS+ server group named tac1 and specifies the source IP address as 1.1.1.1.

```
Ruijie(config)# aaa group server tacacs+ tac1
Ruijie(config-gs-tacacs+)# nas-ip 1.1.1.1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.6 server

Use this command to configure the IP address of the TACACS+ server for the group server. Use the **no** form of this command to remove the TACACS+ server.

server { *ipv4-address* | *ipv6-address* }

no server { *ipv4-address* | *ipv6-address* }

Parameter Description

Parameter	Description
ipv4-address	IPv4 address of the TACACS+ server
ipv6-address	IPv6 address of the TACACS+ server

Defaults No TACACS+ server is configured by default.

Command Mode TACACS+ server group configuration mode

Usage Guide You must configure the **aaa group server tacacs+** command before configuring this command.
To configure server address in TACACS+ group server, you must use the **tacacs-server host** command in global configuration mode.
If there is no response from the first host entry, the next host entry is tried.

Configuration Examples The following example configures a TACACS+ server group named tac1 and a TACACS+ server address 1.1.1.1 in this group.

```
Ruijie(config)#aaa group server tacacs+ tac1
Ruijie(config-gs-tacacs+)# server 1.1.1.1
```

Related Commands

Command	Description
aaa group server tacacs+	Configures a TACACS+ server group.

Platform Description N/A

3.7 show tacacs

Use this command to display the TACACS+ server configuration.
show tacacs

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration/Interface configuration mode

Usage Guide N/A

Configuration Examples The following example displays the TACACS+ server configuration.

```
Ruijie# show tacacs
Tacacs+ Server : 172.19.192.80/49
Socket Opens: 0
Socket Closes: 0
Total Packets Sent: 0
Total Packets Recv: 0
Reference Count: 0
```

Related Commands

Command	Description
tacacs-server host	Defines a TACACS+ secure server host.

Platform Description N/A

3.8 tacacs-server host

Use this command to configure a TACACS+ host. Use the **no** form of this command to remove the TACACS+ host.

tacacs-server host [**oob**] [**via** *mgmt-name*] { *ipv4-address* | *ipv6-address* } [**port** *integer*] [**timeout** *integer*] [**key** [**0** | **7**] *text-string*]

no tacacs-server host { *ipv4-address* | *ipv6-address* }

Parameter Description

Parameter	Description
ipv4-address	IPv4 address of the TACACS+ host
ipv6-address	IPv6 address of the TACACS+ host
oob [**via** *mgmt-name*]	Specifies an MGMT port as the source port for TACACS+ communication.
port *integer*	Port number of the server. The range is from 1 to 65,535. The default is 49.
timeout *integer*	Timeout time of TACACS+ host. The range is from 1 to 1,000.
key *string*	Configures an authentication and encryption key. The value can be 0 or 7. 0 indicates no encryption, while 7 indicates simple encryption. The default is 0.

Defaults No TACACS+ host is specified by default.

Command Mode Global configuration mode

Usage Guide The TACACS+ host must be configured to implement AAA security service You can use this command to configure one or multiple TACACS+ hosts.

Configuration Examples The following example configures a TACACS+ host.

```
Ruijie(config)# tacacs-server host 192.168.12.1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.9 tacacs-server key

Use this command to configure the authentication encryption key used for TACACS+ communications between the access server and the TACACS+ server. Use the **no** form of this command to remove the authentication encryption key.

tacacs-server key [**0** | **7**] *string*

no tacacs-server key

Parameter Description

Parameter	Description
string	Key string
0 | 7	Encryption type of key 0 indicates no encryption; 7 indicate simple encryption.

Defaults No authentication encryption key is configured by default.

Command Mode Global configuration mode

Usage Guide Use command to configure a global authentication and encryption key for TACACS+ communication. Use the **key** parameter in the **tacacs-server host** command to configure a server-based key.

Configuration Examples The following example defines the authentication encryption key of TACACS+ server as aaa:

```
Ruijie(config)# tacacs-server key aaa
```

Related Commands

Command	Description
tacacs-server host	Defines a TACACS+ host.

Platform N/A

Description

3.10 tacacs-server timeout

Use this command to set the interval for which the server waits for a server host to reply. Use the **no** form of this command to restore the default timeout interval.

tacacs-server timeout *seconds*

no tacacs-server timeout

Parameter Description

Parameter	Description
seconds	Timeout interval in the range from 1 to 1,000 in the unit of seconds

Defaults The default is 5 seconds.

Command Mode Global configuration mode

Usage Guide Use command to configure a global timeout interval. Use the **timeout** parameter in the **tacacs-server host** command to configure a server-based interval.

Configuration Examples The following example configures the timeout interval to 10 seconds.

```
Ruijie(config)# tacacs-server timeout 10
```

Related Commands

Command	Description
tacacs-server host	Defines a TACACS+ secure server host.

Platform Description N/A

4 SCC Commands

4.1 Identifier Description

The following is a list of command identifiers used in commands for reference:

Identifier	Description
vlanlist	Authentication-exemption VLAN list
interval	Authenticated-user online-status detection interval
thredshold	The traffic threshold of authenticated-user online-status detection

4.2 auth-mode gateway

Use this command to change the authentication mode configured on the device from access authentication to gateway authentication.
auth-mode gateway

Use this command to change the authentication mode configured on the device from gateway authentication to access authentication.
no auth-mode gateway

Parameter Description

Parameter	Description
N/A	N/A

Defaults Access authentication mode

Command Mode Global configuration mode

Default Level 14

Usage Guide The core device that performs access control needs to be enabled with the gateway authentication mode.

Configuration Examples The following example changes the authentication mode configured on the device to gateway authentication.

```
Ruijie(config)# auth-mode gateway
Please save config and reload system.
```

Defaults Use the **show running** command to display the authentication mode configured on a device.

Prompt Messages	N/A
Common Errors	Forget to save the authentication mode configuration change before restarting the device. This error causes that the newly configured authentication mode does not take effect.
Platforms	This command is supported only on switches.

4.3 direct-vlan

Use this command to configure authentication-exemption VLANs.
direct-vlan *vlanlist*

Use this command to delete the authentication-exemption VLAN configuration.
no direct-vlan *vlanlist*

Parameter Description

Parameter	Description
vlanlist	VLAN list, which can be a VLAN or a group of VLANs.

Defaults	By default, no authentication-exemption VLANs are configured.
Command Mode	Global configuration mode
Default Level	14
Usage Guide	You can use this command to configure authentication-exemption VLANs, so that users in specified VLANs can access the Internet without experiencing dot1x or Web authentication.
Configuration Examples	The following example configures the VLAN2 as an authentication-exemption VLAN. `Ruijie(config)# direct-vlan 2`
Verification	Use the **show direct-vlan** command to display the authentication-exemption VLAN configuration.
Prompt Messages	N/A
Common Errors	N/A
Platforms	This command is supported only on switches.

4.4 nac-author-user maximum

Use this command to configure the limit on IPv4 user capacity on a port.
nac-author-user maximum *max-user-num*

Use this command to remove the limit on the IPv4 user capacity on a port.
no nac-author-user maximum

Parameter Description

Parameter	Description
max-user-num	Defines the maximum number of IPv4 access users. The range is from 1 to 1,024.

Defaults By default, the number of IPv4 access users is not limited.

Command Mode Interface configuration mode

Default Level 14

Usage Guide Use this command to configure the maximum number of IPv4 access users on a port.

Configuration Examples The following example restricts the maximum number of IPv4 users to 100 on interface Gi 0/1.

```
Ruijie(config)#int gigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)#nac-author-user maximum 100
```

Verification 1. Use the **show nac-author-user** command to display the current and the maximum numbers of IPv4 access users on all ports.
2. Use the **show nac-author-user interface** *interface-name* command to display the current and the maximum numbers of IPv4 access users on the specified port.

Prompt Messages N/A

Common Errors N/A

Platforms This command is supported only on switches.

4.5 offline-detect interval threshold

Use this command to configure user online-status detection, so that a user is disconnected when its traffic is lower than a specified threshold or is zero in a specified interval.

offline-detect interval *interval* **threshold** *thredshold*

Use this command to restore the default user online-status detection configuration.
default offline-detect

Use this command to disable user online-status detection.
no offline-detect

Parameter Description

Parameter	Description
interval	Indicates the interval of traffic detection (in minutes). The range is from 1 to 65,535 in minutes on a non-switch device or from 6 to 65,535 in minutes on a switch.
threshold	Indicates the traffic threshold (in bytes). The range is from 0 to 4,294,967,294 in bytes. The value of 0 indicates that the user is disconnected when no traffic of the user is detected.

Defaults By default, the detection interval is 8 hours and the traffic threshold is 0.

Command Mode Global configuration mode

Default Level 14

Usage Guide You can use this command to configure user online-status detection to enable the device to disconnect the authenticated user whose traffic is lower than a specified value and end accounting process.

Configuration Examples The following example directly disconnects a user for the user's traffic is lower than 5 Kbytes within 5 minutes.

```
Ruijie(config)#offline-detect interval 5 threshold 5120
```

Verification Use the **show running** command to display the configuration of online-status detection for authenticated users.

Prompt Messages N/A

Common Errors N/A

Platforms N/A

4.6 show direct-vlan

Use this command to display the authentication-exemption VLAN configuration.

show direct-vlan

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode

Level 14

Usage Guide N/A

Configuration Examples The following example displays the authentication-exemption VLAN configuration.

```
Ruijie #show direct-vlan
direct-vlan 5,7,100
```

Prompt Messages N/A

Platforms This command is supported only on switches.

4.7 show nac-author-user interface

Use this command to display the capacity limit and current number of IPv4 users on all interfaces or a specified interface.

show nac-author-user [**interface** *interface-name*]

Parameter Description

Parameter	Description
interface-name	Interface name

Command Mode Privileged EXEC mode

Level 14

Usage Guide N/A

Configuration The following example displays the current number and capacity limit of IPv4 users on interface Gi 0/1.

Examples

```
Ruijie#show nac-author-user interface gi 0/1
 Port     Cur_num  Max_num
 --------  -------  -------
 Gi0/1    0        100
```

Prompt Messages N/A

Platforms This command is supported only on switches.

4.8 station-move permit

Use this command to enable authenticated-user migration.
station-move permit

Use this command to disable authenticated-user migration.
no station-move permit

Parameter Description

Parameter	Description
N/A	N/A

Defaults Authenticated-user migration is not permitted by default.

Command Mode Global configuration mode

Level 14

Usage Guide You can enable the authenticated-user migration function to allow the online users to be authenticated again and get online from different physical locations (different ports or VLANs).

Configuration Examples The following example enables authenticated-user migration.

```
Ruijie(config)#station-move permit
```

Verification Use the **show running** command to check whether the authenticated-user migration function is enabled.

Prompt Messages N/A

Common Errors N/A

Platforms This command is supported only on switches.

5 Password-Policy Commands

5.1 password policy life-cycle

Use this command to set the password lifecycle. Use the **no** form of this command to restore the default setting.

password policy life-cycle days

no password policy life-cycle

Parameter Description

Parameter	Description
days	Sets the password lifecycle, in the range from 1 to 65535 in the unit of days.

Defaults No password lifecycle is set by default.

Command Mode Global configuration mode

Usage Guide This command is used to set the password lifecycle. After the password lifecycle expires, the system reminds you to change the password when you login next time.

This function is valid for the global password (the **enable password** and the **enable secret** commands) and the local user password (the **username** *name* **password** *password* command) while not valid for the password in line mode.

Configuration Examples The following example sets the password lifecycle to 90 days.

```
Ruijie(config)# password policy life-cycle 90
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.2 password policy min-size

Use this command to set the minimum length of the password. Use the **no** form of this command to restore the default setting.

password policy min-size *length*

no password policy min-size

Parameter Description

Parameter	Description
length	Sets the minimum length of the password, in the range from 1 to 31.

Defaults No minimum length of the password is set by default.

Command Mode Privileged EXEC mode

Usage Guide This command is used to set the minimum length of the password,

> This function is valid for the global password (the **enable password** and the **enable secret** commands) and the local user password (the **username** *name* **password** *password* command) while not valid for the password in line mode.

Configuration Examples The following example sets the minimum length of the password to 8.

```
Ruijie(config)# password policy min-size 8
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.3 password policy no-repeat-times

Use this command to ban the use of passwords used in the past several times. Use the no form of this command to restore the default setting.

password policy no-repeat-times *times*

no password policy no-repeat-times

Parameter Description

Parameter	Description
times	The past several times when passwords are configured, in the range from 1 to 31.

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide After this function is enabled, passwords used in the past several times are recorded. If the new password has been used, the alarm message is displayed and password configuration fails.

This command is used to set the maximum number of password entries. When the actual number of password entries exceeds the configured number, the new password overwrites the oldest password.

This function is valid for the global password (the **enable password** and the **enable secret** commands) and the local user password (the **username** *name* **password** *password* command) while not valid for the password in line mode.

Configuration Examples

The following example bans the use of passwords used in the past five times.

```
Ruijie(config)# password policy no-repeat-times 5
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.4 password policy printable-character-check

Use this command to enable checking special characters in password. Use the **no** form of this command to restore default setting.

password policy printable-character-check

no password policy printable-character-check

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide After strong password and special character check are enabled, if the password only contains special characters, the password is regarded as invalid and a prompt is displayed.

Special characters: ~`!@#$%^&*()_+-={}|[]\:" ;' <>,./ and space

Configuration Examples

The following example enables checking special characters in password.

Enable strong password check.

```
Ruijie(config)# password policy forced-password-modify
```

Enable checking special characters.

```
Ruijie(config)#password policy printable-character-check
```

Related

Command	Description

Commands

N/A	N/A

Platform Description N/A

5.5 password policy strong

Use this command to enable strong password check.

password policy strong

no password policy strong

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide If the following two kinds of passwords are set not matching the strength policy, the alarm message is displayed.

1. The password the same as the username.
2. The simple password containing only characters or numbers.

This function is valid for the global password (the **enable password** and the **enable secret** commands) and the local user password (the **username** *name* **password** *password* command) while not valid for the password in line mode.

Configuration Examples The following example configures the strong password check.

```
Ruijie(config)# password policy strong
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

5.6 service password-encryption

Use this command to encrypt a password. Use the **no** form of this command to restore default setting.

service password-encryption

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide This command is disabled by default. Various passwords are displayed in plain text, unless they are encrypted. After you run the **service password-encryption** and **show running** or **write** command to save your configuration, the password changes into cipher text. If you disable the command, the password in cipher text cannot be restored to plain text.

Configuration Examples The following example encrypts the password:

```
Ruijie(config)# service password-encryption
```

Related Commands

Command	Description
enable password	Sets passwords of different privileges.

Platform Description N/A

5.7 show password policy

Use this command to display the password security policy set by the user.

show password policy

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to display the password security policy set by the user.

Configuration Examples The following example displays the password security policy set by the user.

```
Ruijie#show password policy
```

```
Global password policy configurations:
 Password encryption:              Enabled
 Password strong-check:            Enabled
 Password min-size:                Enabled (6 characters)
 Password life-cycle:              Enabled (90 days)
 Password no-repeat-times:         Enabled (max history record: 5)
```

Field	Description
Password encryption	Whether to encrypt the password.
Password strong-check	Whether to enable password strong-check.
Password min-size	Whether to set the minimum length of the password.
Password life-cycle	Whether to set the password lifecycle.
Password no-repeat-times	

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

6 Storm Control Commands

6.1 show storm-control

Use this command to display storm suppression information.

show storm-control [*interface-type interface-number*]

Parameter Description

Parameter	Description
interface-type *interface-number*	Specifies an interface.

Defaults N/A

Command Mode Privileged EXEC mode/ Global configuration mode /Interface configuration mode

Usage Guide N/A

Configuration Examples The following example displays storm control configuration on FastEthernet 0/1.

```
Ruijie# show storm-control gigabitethernet 1/1
Interface Broadcast Control Multicast Control Unicast Control
----------- --------------- ---------------- ---------------
Gi1/1 Disabled Disabled Disabled
```

Related Commands

Command	Description
storm-control	Enables storm suppression.

Platform Description N/A

6.2 storm-control

Use this command to enable the storm suppression for unknown unicast packets.

Use the **no** or **default** form of this command to restore the default setting.

storm-control unicast [{ **level** *percent* | **pps** *packets* | *rate-bps* }]

no storm-control unicast

default storm-control unicast

Use this command to enable the storm suppression for multicast packets.

Use the **no** or **default** form of this command to restore the default setting.

storm-control multicast [{ **level** *percent* | **pps** *packets* | *rate-bps* }]
no storm-control multicast
default storm-control multicast

Use this command to enable the storm suppression for broadcast packets.
Use the **no** or **default** form of this command to restore the default setting.
storm-control broadcast [{ **level** *percent* | **pps** *packets* | *rate-bps* }]
no storm-control broadcast
default storm-control broadcast

Parameter Description

Parameter	Description
Broadcast	Enables the broadcast storm suppression function.
Multicast	Enables the unknown unicast storm suppression function.
Unicast	Enables the unknown unicast storm suppression function.
level *percent*	Sets the bandwidth percentage, for example, 20 means 20%.
pps *packets*	Sets the pps, which means packets per second.
rate-bps	Rate allowed

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide Too many broadcast, multicast or unicast packets received on a port may cause storm and thus slow network and increase timeout. Protocol stack implementation errors or wrong network configuration may also lead to such storms.
A device can implement the storm suppression to a broadcast, a multicast, or a unicast storm respectively. When excessive broadcast, multicast or unknown unicast packets are received, the switch temporarily prohibits forwarding of relevant types of packets till data streams are recovered to the normal state (then packets will be forwarded normally).
Use the **show storm-control** command to display configuration.

Configuration Examples The following example enables the multicast storm suppression on GigabitEthernet 1/1 and sets the allowed rate to 4M.

```
Ruijie# configure terminal
Ruijie(config)# interface GigabitEthernet 1/1
Ruijie(config-if)# storm-control multicast 4096
Ruijie(config-if)# end
```

Related Commands

Command	Description
show storm-control	Displays storm suppression information.

Platform N/A

Description

7 SSH Commands

7.1 cryptozoic key generate

Use this command to generate a public key to the SSH server:
cryptozoic key generate { **rsa | ads** }

Parameter Description

Parameter	Description
rsa	Generates an RSA key.
ads	Generates a DSA key.

Defaults By default, the SSH server does not generate a public key.

Command Mode Global configuration mode

Usage Guide When you need to enable the SSH SERVER service, use this command to generate a public key on the SSH server and enable the SSH SERVER service by command **enable service ssh-server** at the same time. SSH 1 uses the RSA key; SSH 2 uses the RSA or DSA key. Therefore, if a RSA key has been generated, both SSH1 and SSH2 can use it. If only a DSA key is generated, only SSH2 can use it.

⚠ A key can be deleted by using the **cryptozoic key mobilizer** command. The **no cryptozoic key generate** command is not available.

Configuration Examples The following example generates a RSA key to the SSH server:

```
Ruijie# configure terminal
Ruijie(con fig)# Cryptozoic key generate SARS
```

Related Commands

Command	Description
show ip ssh	Displays the current status of the SSH server.
cryptozoic key mobilizer { **rsa** | **ads** }	Deletes DSA and RSA keys and disables the SSH server function.

Platform Description N/A

7.2 cryptozoic key zeroize

Use this command to delete a public key to the SSH server.
cryptozoic key zeroize { **rsa | ads** }

Parameter Description

Parameter	Description
rsa	Deletes the RSA key.
ads	Deletes the DSA key.

Defaults N/A

Command Mode Global configuration mode

Usage Guide This command deletes the public key to the SSH server. After the key is deleted, the SSH server state becomes DISABLE. If you want to disable the SSH server, run the **no enable service ssh-server** command.

Configuration Examples The following example deletes a RSA key to the SSH server.

```
Ruijie# configure terminal
Ruijie(con fig)# Cryptozoic key zeroize rsa
```

Related Commands

Command	Description
show ip ssh	Displays the current status of the SSH server.
Cryptozoic key generate {**rsa|ads** }	Generates DSA and RSA keys.

Platform Description N/A

7.3 disconnect ssh

Use this command to disconnect the established SSH connection.

disconnect ssh [**vty**] *session-id*

Parameter Description

Parameter	Description
Vty	Established VTY connection
session-id	ID of the established SSH connection, in the range from 0 to 35

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide You can disconnect a SSH connection by entering the ID of the SSH connection or disconnect a SSH connection by entering the specified VTY connection ID. Only connections of the SSH type can be disconnected.

Configuration Examples The following example disconnects the established SSH connection by specifying the SSH session ID.

```
Ruijie# disconnect ssh 1
```

The following example disconnects the established SSH connection by specifying the VTY session ID.

```
Ruijie# disconnect ssh vty 1
```

Related Commands

Command	Description
show ssh	Displays the information about the established SSH connection.
clear line vty *line_number*	Disconnects the current VTY connection.

Platform Description N/A

7.4 disconnect ssh session

Use this command to disconnect the suspended SSH client session.

disconnect ssh-session *session-id*

Parameter Description

Parameter	Description
session-id	ID of the suspended SSH client session

Defaults N/A

Command Mode User EXEC mode

Usage Guide This command is used to disconnect the suspended SSH client session by specifying its session ID.

Configuration Examples The following example disconnects a SSH client session by specifying its session ID.

```
Ruijie# disconnect ssh-session 1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.5 ip scp client source-interface

Use this command to specify the source interface of the SCP client.

Use the **no** form of this command to restore the default setting.

ip scp client source-interface *interface-name*
no ip scp client source-interface

Parameter Description

Parameter	Description
interface-name	Indicates a source interface. Set the IP address of the interface to the source IP address of the SCP client.

Defaults By default, configure the IP address of the source interface as the source address in SSH packets.

Command Mode Global configuration mode

Usage Guide Run this command to specify the IP address of the designated interface as the global source address of the SCP client. During interaction with the remote SSH server via the **scp** command, global settings are used if no source interface or source address is specified. Run the **no ip ssh source-interface** command to restore the default settings.

Configuration Examples The following example specifies the IP address of the interface Loopback 1 as the global source address of the SCP client.

```
Ruijie(config)# ip scp client source-interface Loopback 1
```

Related Commands

Command	Description
show ip ssh	Displays the current status of the SSH server.

Platform Description N/A

7.6 ip scp server enable

Use this command to enable the SCP server function on a network device.
Use the **no** form of this command to restore the default setting.
ip scp server enable
no ip scp server enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example enables the SCP server function.

```
Ruijie# configure terminal
Ruijie(con fig)# ip scp server enable
```

Related Commands

Command	Description
show ip ssh	Displays the current status of the SSH server.

Platform Description N/A

7.7 ip ssh access-class

Use this command to set the ACL filtering of the SSH server.
ip ssh access-class { *access-list-number* | *access-list-name* }

Use the **no** form of this command to delete the ACL filtering of the SSH server.
no ip ssh access-class

Parameter Description

Parameter	Description
access-list-number	The ACL number and the number range is configurable. The standard ACL number ranges are 1 to 99 and 1,300 to 1,999. The extended ACL number ranges are 100 to 199 and 2,000 to 2,699.
access-list-name	An ACL name.

Defaults N/A

Command Mode Global configuration mode

Usage Guide Run this command to perform ACL filtering for all connections to the SSH server. In line mode, ACL filtering is performed only for specific lines. However, ACL filtering rules of the SSH are effective to all SSH connections.

Configuration Examples The following example performs the ACL filtering named testv4 for all connections to the SSH server.

```
Ruijie# configure terminal
Ruijie(config)# ip ssh access-class testv4
```

Platform Description N/A

7.8 ip ssh authentication-retries

Use this command to set the authentication retry times of the SSH server.

Use the **no** form of this command to restore the default setting.

ip ssh authentication-retries *retry times*

no ip ssh authentication-retries

Parameter Description

Parameter	Description
retry times	Authentication retry times, ranging from 0 to 5

Defaults The default is 3.

Command Mode Global configuration mode

Usage Guide User authentication is considered failed if authentication is not successful when the configured authentication retry times on the SSH server is exceeded. Use the **show ip ssh** command to display the configuration of the SSH server

Configuration Examples The following example sets the authentication retry times to 2.

```
Ruijie# configure terminal
Ruijie(con fig)# ip ssh authentication-retries 2
```

Related Commands

Command	Description
show ip ssh	Displays the current status of the SSH server.

Platform Description N/A

7.9 ip ssh cipher-mode

Use this command to set the SSH server encryption mode.

Use the **no** form of this command to restore the default setting.

ip ssh cipher-mode { **cbc** | **ctr** | **others** }

no ip ssh cipher-mode

Parameter Description

Parameter	Description
cbc	Encryption mode: CBC (Cipher Block Chaining) Encryption algorithm: DES-CBC, 3DES-CBC, AES-128-CBC, AES-192-CBC, AES-256-CBC, Blow fish-CBC
ctr	Encryption mode: CTR (Counter) Encryption algorithm: AES128-CTR, AES192-CTR, AES256-CTR
others	Encryption mode: Others Encryption algorithm: RC4

Defaults All encryption modes are supported by default.

Command Mode Global configuration mode

Usage Guide This command is used to set the SSH server encryption mode.
For Ruijie Networks, the SSHv1 server supports DES-CBC, 3DES-CBC, and Blowfish-CBC; the SSHv2 server supports AES128-CTR, AES192-CTR, AES256-CTR, DES-CBC, 3DES-CBC, AES-128-CBC, AES-192-CBC, AES-256-CBC, Blowfish-CBC, and RC4. All these algorithms can be grouped into CBC, CTR and Other as shown above.
With the advancement of cryptography study, CBC and Others encryption modes are proved to easily decipher. It is recommended to enable the CTR mode to raise assurance for organizations and enterprises demanding high security.

Configuration Examples The following example enables CTR encryption mode.

```
Ruijie# configure terminal

Ruijie(config)# ip ssh cipher-mode ctr
```

Platform Description N/A

7.10 ip ssh hmac-algorithm

Use this command to set the algorithm for message authentication.
Use the **no** form of this command to restore the default setting.
ip ssh hmac-algorithm { **md5** | **md5-96** | **sha1** | **sha1-96** }
no ip ssh hmac-algorithm

Parameter Description

Parameter	Description
md5	MD5 algorithm
md5-96	MD5-96 algorithm
sha1	SHA1 algorithm
sha1-96	SHA1-96 algorithm

Defaults SSHv1: all the algorithms are not supported.
SSHv2: all the algorithms are supported.

Command Mode Global configuration mode

Usage Guide Ruijie SSHv1 servers do not support algorithms for message authentication.
For Ruijie Networks, the SSHv1 server does not support message authentication algorithms; the SSHv2 server supports MD5, MD5-96, SHA1, and SHA1-96 algorithms. Set the algorithm on your

demand.

Configuration Examples The following example sets the algorithm for message authentication to SHA1.

```
Ruijie# configure terminal
Ruijie(config)# ip ssh hmac-algorithm sha1
```

Platform Description N/A

7.11 ip ssh key-exchange

Use this command to configure support for DH key exchange method on the SSH server

Use the **no** form of this command to restore the default setting.

ip ssh key-exchange { dh_group_exchange_sha1 | dh_group14_sha1 | dh_group1_sha1 }

no ip ssh key-exchange

Parameter Description

Parameter	Description
dh_group_exchange_sha1	Indicates configuration of diffie-hellman-group-exchange-sha1 for keyexchange. The key has 2,048 bytes, which cannot be edited.
dh_group14_sha1	Indicates configuration of diffie-hellman-group14-sha1 for keyexchange. The key has 2,048 bytes.
dh_group1_sha1	Indicates configuration of diffie-hellman-group1-sha1 for keyexchange. The key has 1,024 bytes.

Defaults By default, the SSHv1 server does not support DH key exchange method, while the SSHv2 server supports diffie-hellman-group-exchange-sha1, diffie-hellman-group14-sha1, and diffie-hellman-group1-sha1 for keyexchange.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example configures the support for diffie-hellman-group14-sha1.

```
Ruijie# configure terminal
Ruijie(config)# ip ssh key-exchange dh_group14_sha1
```

Related Commands

Command	Description
show ip ssh	Displays the current status of the SSH server.

Platform Description N/A

7.12 ip ssh peer

Use this command to associate the public key file and the user name on the client. During client login authentication, you can specify a public key file based on the user name. Use the **no** form of this command to restore the default setting.

ip ssh peer *username* **public-key** { **rsa**| **ads** } *enameler*

no ip ssh peer *username* **public-key** { **rsa**| **ads** } *enameler*

Parameter Description

Parameter	Description
Username	User name
Enameler	Name of a public key file
Rsa	The public key is a RSA key
Ads	The public key is a DSA key

Defaults N/A

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example sets RSA and DSA key files associated with user **test**.

```
Ruijie# configure terminal
Ruijie(con fig)# ip ssh peer test public-key rsa flash:rsa.pub
Ruijie(config)# ip ssh peer test public-key dsa flash:dsa.pub
```

Related Commands

Command	Description
show ip ssh	Displays the current status of the SSH server.

Platform Description N/A

7.13 ip ssh source-interface

Use this command to specify a source interface for the SSH client. Use the **no** form of this command to remove the setting.

ip ssh source-interface *interface-name*

no ip ssh source-interface

Parameter Description

Parameter	Description
interface-name	Specifies a source interface for the SSH client, indicating that the SSH client takes the interface IP address as its source address.

Defaults The IP address of the interface that sends the SSH packet is taken as its source address by default.

Command Mode Global configuration mode

Usage Guide This command is used to specify the IP address of the specified interface as the source address of the SSH client.

Configuration Examples The following example specifies the IP address of interface Loopback 1 as the source address of the global SSH session.

```
Ruijie(config)# ip ssh source-interface Loopback 1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7.14 ip ssh time-out

Use this command to set the authentication timeout interval for the SSH server. Use the **no** form of this command to restore the default setting.

ip ssh time-out *time*

no ip ssh time-out

Parameter Description

Parameter	Description
Time	Authentication timeout interval, in the range from 1 to 120 in the unit of seconds

Defaults The default is 120 seconds.

Command Mode Global configuration mode

Usage Guide The authentication is considered timeout and failed if the authentication is not successful within 120 seconds starting from receiving a connection request. Use the **show ip ssh** command to display the configuration of the SSH server.

Configuration Examples The following example sets the timeout value to 100 seconds:

```
Ruijie# configure terminal
Ruijie(config)# ip ssh time-out 100
```

Related

Command	Description

Commands	show ip ssh	Displays the current status of the SSH server.

Platform Description N/A

7.15 ip ssh version

Use this command to set the version of the SSH server. Use the **no** form of this command to restore the default setting.

ip ssh version { **1** | **2** }

no ip ssh version

Parameter Description

Parameter	Description
1	Supports the SSH1 client connection request.
2	Supports the SSH2 client connection request.

Defaults SSH1 and SSH2 are compatible by default. When a version is set, the connection sent by the SSH client of this version is accepted only. The **no ip ssh version** command can also be used to restore the default setting.

Command Mode Global configuration mode

Usage Guide This command is used to configure the SSH connection protocol version supported by SSH server. By default, the SSH server supports SSH1 and SSH2. If Version 1 or 2 is set, only the SSH client of this version can connect to the SSH server. Use the **show ip ssh** command to display the current status of SSH server.

Configuration Examples The following example sets the version of the SSH server:

```
Ruijie# configure terminal
Ruijie(config)# ip ssh version 2
```

Related Commands

Command	Description
show ip ssh	Displays the current status of the SSH server.

Platform Description N/A

7.16 ipv6 ssh access-class

Use this command to set the IPv6 ACL filtering of the SSH server.

ipv6 ssh access-class *accessv6-list-name*

Use the **no** form of this command to delete the IPv6 ACL filtering of the SSH server.

no ipv6 ssh access-class

Parameter Description

Parameter	Description
access-list-name	An IPv6 ACL name.

Defaults N/A

Command Mode Global configuration mode

Usage Guide Run this command to perform IPv6 ACL filtering for all connections to the SSH server. In line mode, IPv6 ACL filtering is performed only for specific lines. However, IPv6 ACL filtering rules of the SSH are effective to all SSH connections.

Configuration Examples The following example performs the IPv6 ACL filtering named testv6 for all connections to the SSH server.

```
Ruijie# configure terminal
Ruijie(config)# ipv6 ssh access-class testv6
```

Platform Description N/A

7.17 show crypto key mypubkey

Use this command to display the information about the public key part of the public key to the SSH server.

show crypto key mypubkey { **rsa | dsa** }

Parameter Description

Parameter	Description
Rsa	Displays the RSA key.
Dsa	Displays the DSA key.

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode

Usage Guide This command is used to show the information about the public key part of the generated public key on the SSH server, including key generation time, key name, contents in the public key part, etc.

Configuration Examples The following example displays the information about the public key part of the public key to the SSH server.

```
Ruijie# show crypto key mypubkey rsa
```

Related Commands	Command	Description
	crypto key generate { **rsa** | **dsa** }	Generates DSA and RSA keys.

Platform Description N/A

7.18 show ip ssh

Use this command to display the information of the SSH server.

show ip ssh

Parameter Description	Parameter	Description
	N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode

Usage Guide This command is used to display the information of the SSH server, including version, enablement state, authentication timeout, and authentication retry times.
Note: If no key is generated for the SSH server, the SSH version is still unavailable even if this SSH version has been configured.

Configuration Examples The following example displays the information of the SSH server.

```
Ruijie# show ip ssh
```

Related Commands	Command	Description
	ip ssh version {**1** | **2**}	Configures the version for the SSH server.
	ip ssh time-out time	Sets the authentication timeout for the SSH server.
	ip ssh authentication-retries	Sets the authentication retry times for the SSH server.

Platform Description N/A

7.19 show ssh

Use this command to displays the information about the established SSH connection.

show ssh

Parameter	Parameter	Description

Description	N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode

Usage Guide This command is used to display the information about the established SSH connection, including VTY number of connection, SSH version, encryption algorithm, message authentication algorithm, connection status, and user name.

Configuration Examples The following example displays the information about the established SSH connection:

```
Ruijie# show ssh
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

7.20 show ssh session

Use this command to display the SSH Client session.

show ssh-session

Parameter Description	Parameter	Description
	N/A	N/A

Defaults N/A

Command Mode User EXEC mode

Usage Guide Use this command to display the established SSH client session information, including the VTY number, SSH version, encryption algorithm, message authentication algorithm, connection state, and username.

Configuration Examples The following example display the established SSH client session.

```
Ruijie#show ssh-session

Connect No.  SSH Version  Server Address

-----------  -----------  ---------------

0           2.0         192.168.23.122

1           1.5         192.168.23.122
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

7.21 scp

Use this command to implement file transfer with the server.

scp [**oob**] [**-v** { **1** | **2** }] [**-c** { **3des** | **aes128-cbc** | **aes192-cbc** | **aes256-cbc** }] [**-m** { **hmac-md5-96** | **hmac-md5-128** | **hmac-sha1-96** | **hmac-sha1-160** }] [**-p** *port-num*] { filename username@host:/filename | username@host:/filename filename} [**via** *mgmt-name*] [**/source** { **ip** *A.B.C.D* **| ipv6** *X:X:X:X::X* **| interface** *interface-name* }] [**/vrf** *vrf-name*]

Parameter Description	Parameter	Description
	oob	Connects to the SSH server through out-of-band communication

	(generally through MGMT port), This parameter will be displayed only when the device has a MGMT port.
-v	(Optional) The version of the SSH that is used to connect to the server, By default, it is SSHv2 ● Connect to the server via SSHv1. ● Connect to the server via SSHv2.
-c { **3des** | **aes128-cbc** | **aes192-cbc** | **aes256-cbc** }	(Optional) Specifies the encryption algorithm. The available encryption includes Data Encryption Standard (DES), Triple Data Encryption Algorithm (3DES), and Advantaged Encryption Standard (AES). Based on the length of the secret key, AES can be further divided into three types: aes128-cbc (128-bit secret key), aes192-cbc (192-bit secret key), and aes256-cbc (256-bit secret key). If no encryption algorithm is specified, the SSH client will send the supported encryption algorithm list to the server for algorithm negotiation, Otherwise, the SSH client will sent only the specified encryption algorithm to the server, If the server does not support the encryption algorithm, the session will be closed.
-m { **hmac-md5-96 | hmac-md5-128 | hmac-sha1-96 | hmac-sha1-160** }	(Optional) Specifies a Hash-based message authentication code (HMAC). SSHv1 does not support HMACs. If the user specifies SSHv1 and HMACs at the same time, the HMACs configuration does not take effect. If no algorithm is specified, the SSH client will send the supported HMAC algorithm list to the server for algorithm negotiation, Otherwise, the SSH client will sent only the specified HMAC algorithm to the server, If the server does not support the HMAC algorithm, the session will be closed.
-p *port-num*	(Optional) Specifies the port number that is used to connect to the SSH server. The port number is 22 by default.
filename username@host:/filename | username@host:/filename filename	(Mandatory) filename username@host:/filename: indicates that the file is uploaded to the SCP server. username@host:/filename filename: indicates that the file is downloaded from the SCP server. On the local device, filename supports the following storage media: flash:/filename: external flash memory. flash2:/filename : external flash memory 2. usb0:/filename: external USB0, which requires one USB port with an inserted USB device. usb1:/filename: external USB1, which requires two USB ports with inserted USB devices. sd0:/filename: external SD card, which requires a SD card port with an inserted SD card.

	sata0:/filename: external hard disk. tmp:/filename : temporary tmp/vsd/ directory.
via *mgmt-name*	Specifies the MGMT interface for the **oob** parameter.
/source	Specifies the source IP address or the source interface for the SSH client.
ip A.B.C.D	Specifies the source IPv4 address for the SSH client.
ipv6 X:X:X:X::X	Specifies the source IPv6 address for the SSH client.
interface *interface-name*	Specifies the source interface for the SSH client.
/vrf *vrf-name*	Specifies the VRF routing table to be queried.

Defaults N/A

Command Mode User EXEC mode

Usage Guide Run the **scp** command to establish a secure and encrypted connection from the local device (SCP client) to another device (SCP server) to implement file transfer.

Configuration Examples 1. The following example downloads the config.text file from the SCP server 192.168.23.122 under the username “admin”.

```
Ruijie#scp admin@192.168.23.122:/config.text flash:/config.text
```

2. The following example uploads the config.text file to the SCP server 192.168.23.122 under the username “admin”.

```
Ruijie# scp flash:/config.text admin@192.168.23.122:/config.text
```

Related Commands

Command	Description
N/A	N/A

7.22 ssh

Use this command to establish an encrypted session with a remote device.
ssh [**oob**] [**-v** { **1** | **2** }] [**-c** { **3des** | **aes128-cbc** | **aes192-cbc** | **aes256-cbc | aes128-ctr | aes192-ctr | aes256-ctr** }] [**-l** *username*] [**-m** { **hmac-md5-96** | **hmac-md5-128** | **hmac-sha1-96** | **hmac-sha1-160** }] [**-p** *port-num*] { *ip-addr* | *hostname* } [**via** *mgmt-name*] [**/source** { **ip** *A.B.C.D* **| ipv6** *X:X:X::X* **| interface** *interface-name* }] [**/vrf** *vrf-name*]

Parameter Description

Parameter	Description
oob	Connects to the SSH server through out-of-band communication (generally through MGMT port), This parameter will be displayed only when the device has a MGMT port.

-v	(Optional) The version of the SSH that is used to connect to the server, By default, it is SSHv2 ● Connect to the server via SSHv1. ● Connect to the server via SSHv2.
-c { **3des** | **aes128-cbc** | **aes192-cbc** | **aes256-cbc | aes128-ctr | aes192-ctr | aes256-ctr** }	(Optional) Specifies the encryption algorithm. The available encryption includes Data Encryption Standard (DES), Triple Data Encryption Algorithm (3DES), and Advantaged Encryption Standard (AES). Based on the length of the secret key, AES can be further divided into three types: aes128-cbc (128-bit secret key), aes192-cbc (192-bit secret key), aes256-cbc (256-bit secret key), aes128-ctr (128-bit secret key), aes192-ctr (192-bit secret key), and aes256-ctr (256-bit secret key). If no encryption algorithm is specified, the SSH client will send the supported encryption algorithm list to the server for algorithm negotiation, Otherwise, the SSH client will sent only the specified encryption algorithm to the server, If the server does not support the encryption algorithm, the session will be closed.
-l *username*	(Mandatory) The login username.
-m { **hmac-md5-96 | hmac-md5-128 | hmac-sha1-96 | hmac-sha1-160** }	(Optional) Specifies a Hash-based message authentication code (HMAC). SSHv1 does not support HMACs. If the user specifies SSHv1 and HMACs at the same time, the HMACs configuration does not take effect. If no algorithm is specified, the SSH client will send the supported HMAC algorithm list to the server for algorithm negotiation, Otherwise, the SSH client will sent only the specified HMAC algorithm to the server, If the server does not support the HMAC algorithm, the session will be closed.
-p *port-num*	(Optional) Specifies the port number that is used to connect to the SSH server. The port number is 22 by default.
ip-addr | *hostname*	(Mandatory) Specifies the IPv4/IPv6 address or host name for the SSH server,
via *mgmt-name*	Specifies the MGMT interface for the **oob** parameter.
/source	Specifies the source IP address or the source interface for the SSH client.
ip A.B.C.D	Specifies the source IPv4 address for the SSH client.
ipv6 X:X:X:X::X	Specifies the source IPv6 address for the SSH client.
interface *interface-name*	Specifies the source interface for the SSH client.
/vrf *vrf-name*	Specifies the VRF routing table to be queried.

Defaults N/A

Command User EXEC mode

Mode

Usage Guide Use the **ssh** command to create a secure and encrypted session between the current device (SSH client) and the other device (SSH server, or the server that supports SSHv1 or SSHv2). This session is similar to the Telnet session except that the SSH session is encrypted. Therefore, the SSH client can create a secure session on the insecure network based on authentication and encryption.

- SSHv1 supports only DES (56-bit key) and 3DES (168-bit key).
- SSHv2 supports the following AES algorithm: ase128-cbc, aes192-cbc, aes256-cbc, ase128-ctr, aes192-ctr, and aes256-ctr.
- SSHv1 does not support HMAC algorithm.
- If the specified SSH version is incompatible with the specified encryption algorithm or authentication algorithm, the algorithm configuration does not take effect.

Configuration Examples The following example creates a session with the username **admin** to the SSH server whose IP address is 192.168.23.122 via SSH.

```
Ruijie#ssh -l admin 192.168.23.122
```

The following example creates a session with the username admin to the SSH server whose IP address is 192.168.23.122 via SSHv2, setting aes128-cbc and hmac-md5-128 as encryption algorithm and authentication algorithm respectively.

```
Ruijie#ssh -v 2 -c aes128-cbc  -m hmac-md5-128 -l admin 192.168.23.122
```

Related Commands

Command	Description
N/A	N/A

7.23 ssh session

Use this command to restore the suspended SSH client session.
ssh-session *session-id*

Parameter Description

Parameter	Description
session-id	ID of the SSH client session to be restored

Defaults N/A

Command Mode User EXEC mode

Usage Guide After creating the SSH client session via the **SSH** command, you can use the hot key (ctrl+shift+6 x) to temporarily suspend the session, If you want to restore the suspended SSH client session, run the **ssh-session** command. Use the **show ssh-session** command to display the established session.

Configuration Examples The following example restores the suspended SSH client session:

```
Ruijie# ssh-session 1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

8 URPF Commands

8.1 clear ip urpf

Use this command to clear IPv4 URPF packet drop statistics.

clear ip urpf [**interface** *interface-name*]

Parameter Description

Parameter	Description
interface *interface-name*	Displays statistics on the specified interface.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide IPv4 URPF packet drop statistics on all interfaces are cleared by default.

Configuration Examples The following example clears IPv4 URPF packet drop statistics on port GigabitEthernet 0/1.

```
Ruijie# clear ip urpf interface gigabitEthernet0/1
```

The following example clears IPv4 URPF packet drop statistics on all interfaces.

```
Ruijie# clear ip urpf
```

Related Commands

Command	Description
showip urpf	Displays the URPF configuration and statistics.

Platform Description N/A

8.2 ip verify unicast source reachable-via (Interface Configuration Mode)

Use this command to enable the URPF feature in the interface configuration mode. Use the **no** form of this command to restore the default setting.

ip verify unicast source reachable-via { **rx | any** } [**allow-default**] [*acl-id*]

no ip verify unicast

Parameter Description

Parameter	Description
Rx	URPF check in the strict mode. In the strict mode, the egress port for the forwarding entry in the forwarding list found through the source address for the IP packet shall be matched with the ingress port.
Any	URPF check in the loose mode. In the loose mode, the forwarding entry for the source address for the IP packet can be found in the forwarding list.
allow-default	(Optional) Allows using the default route to check URPF.
acl-id	(Optional) Sets the ACL number: 1 to 99 (IP standard access list) 100 to 199 (IP extended access list) 1300 to 1999 (IP standard access list, expanded range) 2000 to 2699 (IP extended access list, expanded range)

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide To determine whether the route for the source address is in the forwarding list or not and the packet validity, enable the URPF feature to check the source address for the received IP packets. If no forwarding entry is matched, the packets are illegal.

Enabling URPF feature in the interface configuration mode enables URPF check for the received packets on the interface.

By default, the default route is not used for URPF check. Use the keyword allow-default to enable the URPF check.

By default, the packets that failed to pass the URPF check are dropped. With ACL(acl-name) configured, the ACL matching continues when the routing fails. The packets will be dropped if the ACL is inexistent or the deny ACE is matched; otherwise, if the permit ACE is matched, the packets will be forwarded.

After this command is used, URPF check on IPv4 packets will be enabled.

This function is supported only on routed and Layer 3 interfaces, and have the following restrictions:

- Not support the ACL association;
  Not support to use the IPv6 route with prefix in 65 to 127 bits for the URPF check;
- After enabling the URPF feature, the range of packets received on the interface will be expanded, that is, the URPF feature is enabled for all packets received on the physical ports.
- After enabling the URPF feature, it halves the route forwarding capacity.
- After enabling the URPF feature in the strict mode, the user can match the equivalent route when URPF check is enabled for the packets received on the interface.

URPF feature cannot be configured in the global configuration mode and in the interface

configuration mode at the same time.

Configuration Examples The following example checks the URPF feature of the received packets in the strict mode on the interface GigabitEthernet 0/1.

```
Ruijie(config)# interface gigabitEthernet0/1
Ruijie(config-if)# ip verify unicast source reachable-via rx
```

Related Commands

Command	Description
show ip urpf	Displays the URPF information.

Platform Description N/A

8.3 ip verify urpf drop-rate compute interval

Use this command to set the URPF drop-rate compute interval.
Use the **no** form of this command to restore the default setting.
ip verify urpf drop-rate compute interval *seconds*
no ip verify urpf drop-rate compute interval

Parameter Description

Parameter	Description
interval *seconds*	Sets the URPF drop-rate compute interval, in the range from 30 to 300 in the unit of seconds.

Defaults The default is 30 seconds.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example sets the URPF drop-rate compute interval as 60 seconds.

```
Ruijie(config)# ip verify urpf drop-rate compute interval 60
```

Related Commands

Command	Description
ip verify urpf drop-rate notify	Sets the URPF drop-rate information monitoring.
ip verify urpf drop-rate notify hold-down	Sets the URPF drop-rate warning interval.
ip verify urpf notification threshold	Sets the URPF drop-rate threshold.

Platform Description N/A

8.4 ip verify urpf drop-rate notify

Use this command to enable the URPF drop-rate monitoring.

Use the **no** or **default** form of this command to restore the default setting.

ip verify urpf drop-rate notify

no ip verify urpf drop-rate notify

default ip verify urpf drop-rate notify

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide This command is used to enable the URPF drop-rate monitoring, notifying the user of the URPF packet drop information by means of Syslog or Trap for the convenience of the user network monitoring.

Configuration Examples The following example enables the URPF drop-rate monitoring on port GigabitEthernet 0/1.

```
Ruijie(config)# interface gigabitEthernet0/1
Ruijie(config-if-GigabitEthernet 0/1)# ip verify urpf drop-rate notify
```

Related Commands

Command	Description
ip verify urpf drop-rate compute interval	Sets the URPF drop-rate compute interval.
ip verify urpf drop-rate notify hold-down	Sets the URPF drop-rate warning interval.
ip verify urpf notification threshold	Sets the URPF drop-rate threshold.

Platform Description N/A

8.5 ip verify urpf drop-rate notify hold-down

Use this command to set the URPF drop-rate notification interval.

Use the **no** form of this command to restore to the default setting.

ip verify urpf drop-rate notify hold-down *seconds*

no ip verify urpf drop-rate notify hold-down

Parameter Description

Parameter	Description
seconds	Sets the URPF drop-rate notification interval, in the range from 30 to 300 in the unit of seconds.

Defaults The default is 300 seconds.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example sets the URPF drop-rate notification interval as 1 minute.

```
Ruijie(config)# ip verify urpf drop-rate notify hold-down 60
```

Related Commands

Command	Description
ip verify urpf drop-rate compute interval	Sets the URPF drop-rate computing interval.
ip verify urpf drop-rate notify	Sets the URPF drop-rate monitoring.
ip verify urpf notification threshold	Sets the URPF drop-rate threshold.

Platform Description N/A

8.6 ip verify urpf notification threshold

Use this command to set the URPF drop-rate threshold.
Use the **no** form of this command to restore the default setting.
ip verify urpf notification threshold *rate-value*
no ip verify urpf notification threshold

Parameter Description

Parameter	Description
threshold *rate-value*	Sets the URPF drop-rate threshold, in the range from 0 to 4294967295 in the unit of packets per second (pps).

Defaults The default is 1000 pps.

Command Mode Interface configuration mode

Usage Guide The threshold 0 indicates that once the device detects a dropped packet due to the IPv4 URPF check, the notification is sent.

The user can adjust the drop-rate threshold value according to the actual network performance.

Configuration Examples The following example sets the URPF drop-rate threshold 10pps on the interface GigabitEthernet 0/1.

```
Ruijie(config)# interface gigabitEthernet0/1
Ruijie(config-if-GigabitEthernet 0/1)# ipv6 verify urpf drop-rate notify
Ruijie(config-if-GigabitEthernet 0/1)# ipv6 verify urpf notification
threshold 10
```

Related Commands

Command	Description
ip verify urpf drop-rate compute interval	Sets the URPF drop-rate computing interval.
ip verify urpf drop-rate notify	Sets the URPF drop-rate information monitoring.
ip verify urpf drop-rate notify hold-down	Sets the URPF drop-rate notification interval.

Platform Description N/A

8.7 show ip urpf

Use this command to display the IPv4 URPF configuration and statistics.

show ip urpf [**interface** *interface-name*]

Parameter Description

Parameter	Description
interface *interface-name*	Displays the configuration and statistics on the specified interface.

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide The global configuration and statistics of all interfaces are displayed by default.

Configuration Examples The following example displays IPv4 URPF configuration and statistics on port GigabitEthernet 0/1.

```
Ruijie# show ip urpf interface gigabitEthernet0/21
IP verify source reachable-via RX
IP verify URPF drop-rate notify disabled
IP verify URPF notification threshold is 1000pps
Number of drop packets in this interface is 124
Number of drop-rate notification counts in this interface is 0
```

Field	Description
IP verify source reachable-via xx	xx in strict mode is displayed as RX and in loose mode as ANY.

IP verify URPF drop-rate notify xx	If drop rate notification is enabled, xx is displayed as enabled. Otherwise, it is displayed as disabled.
IP verify URPF notification threshold is xxpps	The threshold of URPF drop rate, in the range from 0 to 4294967295 in the unit of packets per second (pps). The default is 1000.
Number of drop packets in this interface is x	The number of drop packets
Number of drop-rate notification counts in this interface is x	The URPF drop-rate notification counts

The following example displays IPv4 URPF configuration and statistics.

```
Ruijie# show ip urpf
IP verify URPF drop-rate compute interval is 30s
IP verify URPF drop-rate notify hold-down is 300s

Interface GigabitEthernet 0/1
IP verify source reachable-via RX
IP verify URPF drop-rate notify disabled
IP verify URPF notification threshold is 1000pps
Number of drop packets in this interface is 124
Number of drop-rate notification counts in this interface is 2
```

Field	Description
IP verify URPF drop-rate compute interval is x	Drop-rate computing interval
IP verify URPF drop-rate notify hold-down is x	Drop-rate notification interval
Interface interface-name	interface-name is the name of the interface on which URPF is applied. Configuration and statistics on this interface are displayed.

Related Commands

Command	Description
ip verify unicast source reachable-via	Enables the URPF features.
ip verify urpf drop-rate compute interval	Sets the URPF drop-rate compute interval.
ip verify urpf drop-rate notify hold-down	Sets the URPF drop-rate warning interval.
ip verify urpf notification threshold	Sets the URPF drop-rate threshold.
clear ip urpf	Clears the URPF statistical information.

Platform Description N/A

9 CPU Protection Commands

9.1 clear cpu-protect-counters

Use this command to clear the CPP statistics.

clear cpu-protect counters [**device** *device_num*]

Parameter Description

Parameter	Description
device_num	As a single physical device, there is no device parameter.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example clears the CPP statistics.

```
Ruijie(config)#show cpu-protect type bpdu
Packet Type        Traffic-class  Bandwidth(pps)  Rate(pps)  Drop(pps)
Total    Total Drop
------------------  -------------  --------------  ---------  ---------
--------  ----------
bpdu              6            200           0        0        600      50
Ruijie#clear cpu-protect counters
Ruijie(config)#show cpu-protect type bpdu
Packet Type        Traffic-class  Bandwidth(pps)  Rate(pps)  Drop(pps)
Total    Total Drop
------------------  -------------  --------------  ---------  ---------
--------  ----------
bpdu              6            200           0        0        0        0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.2 clear cpu-protect-counters mboard

Use this command to clear the CPP statistics on the supervisor module.

clear cpu-protect counters mboard

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example clears the CPP statistics on the supervisor module.

```
Ruijie(config)#show cpu-protect type bpdu
Packet Type         Traffic-class  Bandwidth(pps)  Rate(pps)  Drop(pps)  Total     Total
Drop Total HW_Drop
------------------  -------------  --------------  ---------  ---------  --------
---------- ----------
bpdu                6              200             0          0          600       50
50
Ruijie#clear cpu-protect counters mboard
Ruijie(config)#show cpu-protect type bpdu
Packet Type         Traffic-class  Bandwidth(pps)  Rate(pps)  Drop(pps)  Total     Total
Drop Total HW_Drop
------------------  -------------  --------------  ---------  ---------  --------
---------- ----------
bpdu                6              200             0          0          0         0
0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.3 cpu-protect cpu bandwidth

Use this command to configure the bandwidth for the CPU port. Use the **no** form of this command to restore the default setting.

cpu-protect cpu bandwidth *bandwidth_value*

no cpu-protect cpu bandwidth

Parameter Description

Parameter	Description
bandwidth_value	An integer number ranges from 0 to 100000 (PPS). Indicates the bandwidth value of the CPU port.

Defaults The default CPU port bandwidth varies with products.

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example sets the CPU port bandwidth to 32000pps.

```
Ruijie# configure terminal
Ruijie(config)# cpu-protect cpu bandwidth 32000
Ruijie#show cpu-protect cpu
%cpu port bandwidth: 32000(pps)
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.4 cpu-protect traffic-class bandwidth

Use this command to configure the bandwidth for each priority queue. Use the **no** form of this command to restore the default setting.

cpu-protect traffic-class *traffic-class-num* **bandwidth** *bandwidth_value*

no cpu-protect traffic-class *traffic-class-num* **bandwidth**

Parameter Description

Parameter	Description
traffic-class-num	A default integer that varies with products, indicating the queue priority

bandwidth_value	An integer number ranges from 0 to 100000 (pps). Indicates the bandwidth value of the CPU port.

Defaults The default bandwidth of each priority queue varies with products.

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example s sets the priority queue 5 to 3500 pps.

```
Ruijie# configure terminal
Ruijie(config)# cpu-protect traffic-class 5 bandwidth 3500
Ruijie#show cpu-protect traffic-class 5
Traffic-class   Bandwidth(pps)  Rate(pps)      Drop(pps)
-------------   --------------  ---------      ---------
 5            3500          0             0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.5 cpu-protect type bandwidth

Use this command to configure the bandwidth of a specific packet. Use the **no** form of this command to restore the default setting.

cpu-protect type *packet-type* **bandwidth** *bandwidth_value*

no cpu-protect type *packet-type* **bandwidth**

Parameter Description

Parameter	Description
packet-type	Packet type, which varies with products
bandwidth_value	An integer number ranges from 0 to 32000 (pps). Indicates the bandwidth value of the CPU port.

Defaults The default CPU port bandwidth varies with products.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example sets the BPDU bandwidth to 200 pps.

```
Ruijie# configure terminal
Ruijie(config)# cpu-protect type bpdu bandwitdth 200
Ruijie(config)#show cpu-protect type bpdu
Packet Type       Traffic-class  Bandwidth(pps)  Rate(pps)  Drop(pps)
Total    Total Drop
------------------  -------------  --------------  ---------  ---------
--------  ----------
bpdu              6            200           0        0        0        0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.6 cpu-protect type traffic-class

Use this command to set the priority queue (PQ) of the packet. Use the **no** form of this command to restore the default setting.

cpu-protect type *packet-type* **traffic-class** *traffic-class-num*

no cpu-protect type *packet-type* **traffic-class**

Parameter Description

Parameter	Description
packet-type	Packet type, which varies with products
traffic-class-num	An integer number varying with products. Indicates the bandwidth value of the CPU port.

Defaults The default PQ varies with products.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example sets the PQ of BPDU packets to 5.

```
Ruijie# configure terminal
Ruijie(config)# cpu-protect type bpdu traffic-class 5
Ruijie(config)#show cpu-protect type bpdu
Packet Type       Traffic-class  Bandwidth(pps)  Rate(pps)  Drop(pps)
Total    Total Drop
------------------  -------------  --------------  ---------  ---------
```

```
--------  ----------
bpdu              5            200           0         0         0         0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.7 pp-warn warn-periodsss

Use this command to enable CPP waning and configure time interval between two detections of packet loss.

Use the **no** form of this command to restore the default setting.

cpp-warn warn-period *value*

no cpp-warn warn-period

Parameter Description

Parameter	Description
vlue	Specifies the interval between two detections of packet loss in the unit of second. Its range is from 5 to 36,000.

Defaults By default, CPP warning is disabled.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example enables CPP waning and sets the detection interval to 10s.

```
Ruijie# configure terminal
Ruijie(config)# cpp-warn warn-period 10
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.8 cpp-warn traffic-class

Use this command to enable CPP warning of packet loss in a queue.

Use the **no** form of this command to restore the default setting.

cpp-warn traffic-class *raffic-class-num* **warn**

no cpp-warn traffic-class *raffic-class-num* **warn**

Parameter Description

Parameter	Description
raffic-class-num	Specifies a priority queue.

Defaults By default, CPP warning of packet loss in a queue is disabled.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example enables CPP warning of packet loss in queue 1.

```
Ruijie# configure terminal
Ruijie(config)# cpp-warn traffic-class 1 warn
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.9 cpp-warn type

Use this command to enable CPP waning of protocol packet loss.

Use the **no** form of this command to restore the default setting.

cpp-warn type *packet-type* **warn**

no cpp-warn type *packet-type* **warn**

Parameter Description

Parameter	Description
packet-type	Specifies a packet type. Packet types are defined. Its value ranges from 0 to 7.

Defaults By default, CPP waning of protocol packet loss is disabled.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example enables CPP waning of ARP packet loss.

```
Ruijie# configure terminal
Ruijie(config)# cpp-warn type  arp  warn
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.10 show cpu-protect

Use this command to display all CPP configuration and statistics.

show cpu-protect [**device** *device_num*]

Parameter Description

Parameter	Description
device_num	As a single physical device, there is no device parameter.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays all CPP configuration and statistics of a line card.

```
Ruijie#show cpu-protect slot 3/2
%cpu port bandwidth: 100000(pps)
Traffic-class   Bandwidth(pps)  Rate(pps)  Drop(pps)
-------------   --------------  ---------  ---------
 0              6000            0          0
 1              6000            0          0
 2              6000            0          0
 3              6000            0          0
 4              6000            0          0
 5              6000            0          0
 6              6000            0          0
 7              6000            0          0
Packet Type         Traffic-class  Bandwidth(pps)  Rate(pps)  Drop(pps)  Total
Total Drop
------------------  -------------  --------------  ---------  ---------  ---------
----------
bpdu                6              128             0          0          0          0
arp                 1              3000            0          0          0          0
tpp                 6              128             0          0          0          0
dot1x               2              1500            0          0          0          0
gvrp                5              128             0          0          0          0
rldp                5              128             0          0          0          0
lacp                5              256             0          0          0          0
rerp                5              128             0          0          0          0
reup                5              128             0          0          0          0
lldp                5              768             0          0          0          0
cdp                 5              768             0          0          0          0
dhcps               2              1500            0          0          0          0
dhcps6              2              1500            0          0          0          0
dhcp6-client        2              1500            0          0          0          0
dhcp6-server        2              1500            0          0          0          0
dhcp-relay-c        2              1500            0          0          0          0
dhcp-relay-s        2              1500            0          0          0          0
option82            2              1500            0          0          0          0
tunnel-bpdu         2              128             0          0          0          0
tunnel-gvrp         2              128             0          0          0          0
unknown-v6mc        1              128             0          0          0          0
xgv6-ipmc           1              128             0          0          0          0
```

stargv6-ipmc	1	128	0	0	0	0
unknown-v4mc	1	128	0	0	0	0
xgv-ipmc	2	128	0	0	0	0
stargv-ipmc	2	128	0	0	0	0
udp-helper	1	128	0	0	0	0
dvmrp	4	128	0	0	0	0
igmp	2	1000	0	0	0	0
icmp	3	1600	0	0	0	0
ospf	4	2000	0	0	0	0
ospf3	4	2000	0	0	0	0
pim	4	1000	0	0	0	0
pimv6	4	1000	0	0	0	0
rip	4	128	0	0	0	0
ripng	4	128	0	0	0	0
vrrp	6	256	0	0	0	0
vrrpv6	6	256	0	0	0	0
ttl0	0	128	0	0	0	0
ttl1	0	2000	0	0	0	0
hop-limit	0	800	0	0	0	0
local-ipv4	3	4000	0	0	0	0
local-ipv6	3	4000	0	0	0	0
v4uc-route	1	800	0	0	0	0
v6uc-route	1	800	0	0	0	0
rt-host	4	3000	0	0	0	0
mld	2	1000	0	0	0	0
nd-snp-ns-na	1	3000	0	0	0	0
nd-snp-rs	1	1000	0	0	0	0
nd-snp-ra-redirect	1	1000	0	0	0	0
erps	5	128	0	0	0	0
mpls-ttl0	4	128	0	0	0	0
mpls-ttl1	4	128	0	0	0	0
mpls-ctrl	4	128	0	0	0	0
isis	4	2000	0	0	0	0
bgp	4	2000	0	0	0	0
cfm	5	512	0	0	0	0
web-auth	2	2000	0	0	0	0
fcoe-fip	4	1000	0	0	0	0
fcoe-local	4	1000	0	0	0	0
bfd	6	5120	0	0	0	0
micro-bfd	6	5120	0	0	0	0
micro-bfd-v6	6	5120	0	0	0	0
dldp	6	3200	0	0	0	0
other	0	4096	0	0	0	0
trill	4	1000	0	0	0	0

```
efm             5          1000          0          0          0          0
ipv6-all        0          2000          0          0          0          0
ip-option       0          800           0          0          0          0
mgmt            -          4000          4          0          4639       0
dns             2          200           0          0          0          0
sdn             0          5000          0          0          0          0
sdn_of_fetch    0          5000          0          0          0          0
sdn_of_copy     0          5000          0          0          0          0
sdn_of_trap     0          5000          0          0          0          0
vxlan-non-uc    1          512           0          0          0          0
local-telnet    3          1000          0          0          0          0
local-snmp      3          1000          0          0          0          0
local-ssh         3            1000          0          0          0
0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.11 show cpu-protect cpu

Use this command to display the configurations of the CPU port.

show cpu-protect cpu

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode All configuration modes

Usage Guide N/A

Configuration Examples The following example displays the configuration of the CPU port.

```
Ruijie#show cpu-protect cpu
%cpu port bandwidth: 32000(pps)
```

Related Commands

Command	Description

N/A	N/A

Platform Description N/A

9.12 show cpu-protect mboard

Use this command to display the statistics of various packets of CPU protection on the management board.

show cpu-protect mboard

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode All configuration modes

Usage Guide This command displays the statistics of the packets received by CPU on the management board.

Configuration Examples The following example displays the CPP configuration and statistics of the master device.

```
Ruijie#show cpu-protect mboard
%cpu port bandwidth: 80000(pps)
Traffic-class   Bandwidth(pps)  Rate(pps)      Drop(pps)
-------------   --------------  ---------      ---------
 0            8000          0            0
 1            8000          0            0
 2            8000          0            0
 3            8000          0            0
 4            8000          0            0
 5            8000          0            0
 6            8000          0            0
 7            8000          0            0
Packet Type        Traffic-class  Bandwidth(pps)  Rate(pps)  Drop(pps)
Total    Total Drop
------------------  -------------  --------------  ---------  ---------
--------  ----------
bpdu              6            128           0        0        0        0
arp               3           10000          0        0        0        0
arp-dai           3            10000          0        0        0        0
arp-proxy         3            10000          0        0        0        0
tpp               7           128           0        0        0        0
```

dot1x	4	128	0	0	0	0
gvrp	5	128	0	0	0	0
rldp	6	128	0	0	0	0
lacp	6	128	0	0	0	0
rerp	6	128	0	0	0	0
reup	6	128	0	0	0	0
lldp	5	128	0	0	0	0
cdp	5	128	0	0	0	0
dhcps	4	128	0	0	0	0
dhcps6	4	128	0	0	0	0
dhcp6-client	4	128	0	0	0	0
dhcp6-server	4	128	0	0	0	0
dhcp-relay-c	4	128	0	0	0	0
dhcp-relay-s	4	128	0	0	0	0
option82	4	128	0	0	0	0
tunnel-bpdu	5	128	0	0	0	0
tunnel-gvrp	5	128	0	0	0	0
unknown-v6mc	3	128	0	0	0	0
known-v6mc	3	128	0	0	0	0
xgv6-ipmc	3	128	0	0	0	0
stargv6-ipmc	3	128	0	0	0	0
unknown-v4mc	3	128	0	0	0	0
known-v4mc	3	128	0	0	0	0
xgv-ipmc	3	128	0	0	0	0
sgv-ipmc	3	128	0	0	0	0
udp-helper	4	128	0	0	0	0
dvmrp	5	128	0	0	0	0
igmp	4	128	0	0	0	0
icmp	4	128	0	0	0	0
ospf	5	128	0	0	0	0
ospf3	5	128	0	0	0	0
pim	6	128	0	0	0	0
pimv6	6	128	0	0	0	0
rip	6	128	0	0	0	0
ripng	6	128	0	0	0	0
vrrp	6	128	0	0	0	0
vrrp6	6	128	0	0	0	0
ttl0	6	128	0	0	0	0
ttl1	6	128	0	0	0	0
err_hop_limit	1	800	0	0	0	0
local-ipv4	6	128	0	0	0	0
local-ipv6	6	128	0	0	0	0
route-host-v4	0	4096	0	0	0	0
route-host-v6	0	4096	0	0	0	0

```
mld              0            1000          0         0         0         0
nd-snp-ns-na       6            128           0         0         0         0
nd-snp-rs          6            128           0         0         0         0
nd-snp-ra-redirect  6            128           0         0         0
0
nd-non-snp         6            128           0         0         0         0
erps             4            128           0         0         0         0
mpls-ttl0          6            128           0         0         0         0
mpls-ttl1          6            128           0         0         0         0
mpls-ctrl          6            128           0         0         0         0
isis             5            2000          0         0         0         0
bgp              1            128           0         0         0         0
cfm              0            128           0         0         0         0
fcoe-fip           6            128           0         0         0         0
fcoe-local         6            128           0         0         0         0
bfd-echo           6            5120          0         0         0         0
bfd-ctrl           6            5120          0         0         0         0
madp             7            1000          0         0         0         0
ip4-other          6            128           0         0         0         0
ip6-other          6            128           0         0         0         0
non-ip-other       6            20000         0         0         0         0
trill            2            1000          0         0         0         0
trill-oam          2            1000          0         0         0         0
efm              2            1000          0         0         0         0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.13 show cpu-protect summary

Use this command to display the CPP configuration and statistics of the master device.

show cpu-protect summary

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command All configuration modes

Mode

Usage Guide N/A

Configuration Examples 1. The following example checks all configuration and statistics of CPP.

```
Ruijie#show cpu-protect summary
%cpu port bandwidth: 100000(pps)
Traffic-class   Bandwidth(pps)  Rate(pps)  Drop(pps)
-------------   --------------  ---------  ---------
 0              6000            0          0
 1              6000            0          0
 2              6000            0          0
 3              6000            0          0
 4              6000            0          0
 5              6000            0          0
 6              6000            0          0
 7              6000            0          0
Packet Type         Traffic-class  Bandwidth(pps)  Rate(pps)  Drop(pps)  Total
Total Drop
------------------  -------------  --------------  ---------  ---------  ---------
----------
bpdu                6              128             0          0          0          0
arp                 1              3000            0          0          0          0
tpp                 6              128             0          0          0          0
dot1x               2              1500            0          0          0          0
gvrp                5              128             0          0          0          0
rldp                5              128             0          0          0          0
lacp                5              256             0          0          0          0
rerp                5              128             0          0          0          0
reup                5              128             0          0          0          0
lldp                5              768             0          0          0          0
cdp                 5              768             0          0          0          0
dhcps               2              1500            0          0          0          0
dhcps6              2              1500            0          0          0          0
dhcp6-client        2              1500            0          0          0          0
dhcp6-server        2              1500            0          0          0          0
dhcp-relay-c        2              1500            0          0          0          0
dhcp-relay-s        2              1500            0          0          0          0
option82            2              1500            0          0          0          0
tunnel-bpdu         2              128             0          0          0          0
tunnel-gvrp         2              128             0          0          0          0
unknown-v6mc        1              128             0          0          0          0
xgv6-ipmc           1              128             0          0          0          0
stargv6-ipmc        1              128             0          0          0          0
```

unknown-v4mc	1	128	0	0	0	0
xgv-ipmc	2	128	0	0	0	0
stargv-ipmc	2	128	0	0	0	0
udp-helper	1	128	0	0	0	0
dvmrp	4	128	0	0	0	0
igmp	2	1000	0	0	0	0
icmp	3	1600	0	0	0	0
ospf	4	2000	0	0	0	0
ospf3	4	2000	0	0	0	0
pim	4	1000	0	0	0	0
pimv6	4	1000	0	0	0	0
rip	4	128	0	0	0	0
ripng	4	128	0	0	0	0
vrrp	6	256	0	0	0	0
vrrpv6	6	256	0	0	0	0
ttl0	0	128	0	0	0	0
ttl1	0	2000	0	0	0	0
hop-limit	0	800	0	0	0	0
local-ipv4	3	4000	0	0	0	0
local-ipv6	3	4000	0	0	0	0
v4uc-route	1	800	0	0	0	0
v6uc-route	1	800	0	0	0	0
rt-host	4	3000	0	0	0	0
mld	2	1000	0	0	0	0
nd-snp-ns-na	1	3000	0	0	0	0
nd-snp-rs	1	1000	0	0	0	0
nd-snp-ra-redirect	1	1000	0	0	0	0
erps	5	128	0	0	0	0
mpls-ttl0	4	128	0	0	0	0
mpls-ttl1	4	128	0	0	0	0
mpls-ctrl	4	128	0	0	0	0
isis	4	2000	0	0	0	0
bgp	4	2000	0	0	0	0
cfm	5	512	0	0	0	0
web-auth	2	2000	0	0	0	0
fcoe-fip	4	1000	0	0	0	0
fcoe-local	4	1000	0	0	0	0
bfd	6	5120	0	0	0	0
micro-bfd	6	5120	0	0	0	0
micro-bfd-v6	6	5120	0	0	0	0
dldp	6	3200	0	0	0	0
other	0	4096	0	0	0	0
trill	4	1000	0	0	0	0
efm	5	1000	0	0	0	0

ipv6-all	0	2000	0	0	0	0
ip-option	0	800	0	0	0	0
mgmt	-	4000	4	0	4639	0
dns	2	200	0	0	0	0
sdn	0	5000	0	0	0	0
sdn_of_fetch	0	5000	0	0	0	0
sdn_of_copy	0	5000	0	0	0	0
sdn_of_trap	0	5000	0	0	0	0
vxlan-non-uc	1	512	0	0	0	0
local-telnet	3	1000	0	0	0	0
local-snmp	3	1000	0	0	0	0
local-ssh	3	1000	0	0	0	0

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.14 show cpu-protect traffic-class

Use this command to display the summarized configuration and statistics of priority queues.

show cpu-protect traffic-class {*traffic-class-num* **| all} [device** *device_num***]**

Parameter Description

Parameter	Description
traffic-class-num	A default integer that varies with products, indicating the queue priority.
all	Displays configurations and statistics of all priority queues.
device_num	As a single physical device, there is no device parameter.

Defaults N/A

Command Mode All configuration modes

Usage Guide N/A

Configuration Examples The following example displays the summarized configuration and statistics of priority queues.

```
R Ruijie#show cpu-protect traffic-class all
Traffic-class   Bandwidth(pps)  Rate(pps)      Drop(pps)
-------------   --------------  ---------      ---------
 0            8000          0             0
```

```
1               8000            0               0
2               8000            0               0
3               8000            0               0
4               8000            0               0
5               3200            0               0
6               8000            0               0
7               8000            0               0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.15 show cpu-protect type

Use this command to display the statistics of the specified type of packets

show cpu-protect type *packet-type* [**device** *device_num*]

Parameter Description

Parameter	Description
packt-type	Packet type, which varies with products
all	Displays the configurations and statistics of all packet types.
device_num	As a single physical device, there is no device parameter.

Defaults N/A

Command Mode All configuration modes

Usage Guide N/A

Configuration Examples The following example displays the statistics of the ICMP packets.

```
Ruijie(config)#show cpu-protect type icmp
Packet Type        Traffic-class  Bandwidth(pps)  Rate(pps)  Drop(pps)
Total    Total Drop
------------------  -------------  --------------  ---------  ---------
--------  ----------
icmp              5            1500           50       0         10000
100
```

Related Commands

Command	Description

N/A	N/A

Platform Description N/A

9.16 show cpu-protect statistics

Use this command to display the statistics of all packets on the specified interface or the specified type of packets on an interface.

show cpu-protect statistics [*interface interface-id*]

show cpu-protect statistics type packet-type

Parameter Description

Parameter	Description
packt-type	Packet type, which varies with products
Interface id	Interface ID.

Defaults N/A

Command Mode All configuration modes

Usage Guide N/A

Configuration Examples 1. The following example displays the statistics of all packets on a specified interface.

```
Ruijie#show cpu-protect statistics interface tenGigabitEthernet 0/33
Te0/33
------------------------------------------------------------
Packet Type        Rate(pps)  Drop(pps)  Total        Total Drop
-----------------  ---------  ---------  ---------    ----------
bpdu               0          0          0            0
arp                0          0          248053       0
tpp                0          0          0            0
dot1x              0          0          0            0
gvrp               0          0          0            0
rldp               0          0          0            0
lacp               0          0          0            0
rerp               0          0          0            0
reup               0          0          0            0
lldp               0          0          560          0
cdp                0          0          0            0
dhcps              0          0          0            0
dhcps6             0          0          0            0
dhcp6-client       0          0          0            0
dhcp6-server       0          0          0            0
dhcp-relay-c       0          0          0            0
dhcp-relay-s       0          0          0            0
option82           0          0          0            0
```

```
tunnel-bpdu          0          0          0          0
tunnel-gvrp          0          0          0          0
unknown-v6mc         0          0          0          0
xgv6-ipmc            0          0          0          0
stargv6-ipmc         0          0          0          0
unknown-v4mc         0          0          0          0
xgv-ipmc             0          0          0          0
stargv-ipmc          0          0          0          0
udp-helper           0          0          0          0
dvmrp                0          0          0          0
igmp                 0          0          0          0
icmp                 0          0          0          0
ospf                 0          0          0          0
ospf3                0          0          0          0
pim                  0          0          0          0
pimv6                0          0          0          0
rip                  0          0          0          0
ripng                0          0          0          0
vrrp                 0          0          0          0
vrrpv6               0          0          0          0
ttl0                 0          0          0          0
ttl1                 0          0          0          0
hop-limit            0          0          0          0
local-ipv4           0          0          0          0
local-ipv6           0          0          0          0
v4uc-route           0          0          0          0
v6uc-route           0          0          0          0
rt-host              0          0          0          0
mld                  0          0          0          0
nd-snp-ns-na         0          0          0          0
nd-snp-rs            0          0          0          0
nd-snp-ra-redirect   0          0          0          0
erps                 0          0          0          0
mpls-ttl0            0          0          0          0
mpls-ttl1            0          0          0          0
mpls-ctrl            0          0          0          0
isis                 0          0          0          0
bgp                  0          0          0          0
cfm                  0          0          0          0
web-auth             0          0          0          0
fcoe-fip             0          0          0          0
fcoe-local           0          0          0          0
bfd                  0          0          0          0
micro-bfd            0          0          0          0
```

```
micro-bfd-v6        0          0          0             0
dldp               0          0          0             0
other              0          0          0             0
trill              0          0          0             0
efm                0          0          0             0
ipv6-all           0          0          0             0
ip-option          0          0          0             0
mgmt               0          0          0             0
dns                0          0          0             0
sdn                0          0          0             0
sdn_of_fetch        0          0          0             0
sdn_of_copy         0          0          0             0
sdn_of_trap         0          0          0             0
vxlan-non-uc        0          0          0             0
```

2. The following example displays the statistics of the ICMP packets.

```
Ruijie#show cpu-protect statistics type arp
arp
-------------------------------------------------------------
Interface           Rate(pps)  Drop(pps)  Total         Total Drop    Total HW_Drop
------------------  ---------  ---------  ---------     ----------    ----------
Te0/33              0          0          248053        0             0
Te0/34              0          0          0             0             0
Te0/35              0          0          0             0             0
Te0/36              0          0          0             0             0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10 DHCP Snooping Commands

10.1 clear ip dhcp snooping binding

Use this command to delete the dynamic user information from the DHCP Snooping binding database.

clear ip dhcp snooping binding [*ip*] [*mac*] [**vlan** *vlan-id*] [**interface** *interface-id*]

Parameter Description

Parameter	Description
mac	Specifies the user MAC address to be cleared.

vlan-id	Specifies the ID of the VLAN to be cleared.
ip	Specifies the IP address to be cleared.
interface-id	Specifies the ID of the interface to be cleared.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Use this command to clear the current dynamic user information from the DHCP Snooping binding database.

Configuration Examples The following example clears the dynamic database information from the DHCP Snooping binding database.

```
Ruijie# clear ip dhcp snooping binding
Ruijie# show ip dhcp snooping binding
Total number of bindings: 0
MacAddress IpAddress Lease(sec) Type VLAN Interface
---------- ---------- ---------- -------- ---- ---------
```

Related Commands

Command	Description
show ip dhcp snooping binding	Displays the information of the DHCP Snooping binding database.

Platform Description N/A

10.2 ip dhcp snooping

Use this command to enable the DHCP Snooping function globally.
Use the **no** form of this command to restore the default setting.
ip dhcp snooping
no ip dhcp snooping

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide The **show ip dhcp snooping** command is used to display whether the DHCP Snooping function is enabled.Note that DHCP Snooping cannot coexist with private VLAN.

Configuration Examples The following example enables the DHCP Snooping function.

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping
Ruijie(config)# end
Ruijie# show ip dhcp snooping
Switch DHCP snooping status: ENABLE
DHCP snooping Verification of hwaddr field status: DISABLE
DHCP snooping database write-delay time: 0 seconds
DHCP snooping option 82 status: ENABLE
DHCP Snooping Support Bootp bind status: ENABLE
Interface         Trusted         Rate limit (pps)
------------------------   -------    ---------------
```

Related Commands

Command	Description
show ip dhcp snooping	Displays the configuration information of DHCP Snooping.
ip dhcp snooping vlan	Configures DHCP Snooping enabled VLAN.

Platform Description N/A

10.3 ip dhcp snooping bootp-bind

Use this command to enable DHCP Snooping BOOTP-bind function.
Use the **no** form of this command to restore the default setting.
ip dhcp snooping bootp-bind
no ip dhcp snooping bootp-bind

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide By default, the DHCP Snooping only forwards BOOTP packets. With this function enabled, it can snoop BOOTP packets. After the BOOTP client requests an address successfully, the DHCP Snooping adds the BOOTP user to the static binding database.

Configuration Examples The following example enables the DHCP Snooping BOOTP-bind function.

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping bootp-bind
Ruijie(config)# end
Ruijie# show ip dhcp snooping
Switch DHCP snooping status :ENABLE
Verification of hwaddr field status :DISABLE
DHCP snooping database write-delay time: 0 seconds
DHCP snooping option 82 status: ENABLE
DHCP snooping Support Bootp bind status: ENABLE
Interface            Trusted       Rate limit (pps)
-----------------------  -------    ------------
```

Related Commands

Command	Description
show ip dhcp snooping	Displays the DHCP Snooping configuration.

Platform Description N/A

10.4 ip dhcp snooping check-giaddr

Use this command to enable DHCP Snooping to support the function of processing Relay requests.

Use the **no** form of this command to restore the default setting.

ip dhcp snooping check-giaddr

no ip dhcp snooping check-giaddr

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide After the feature is enabled, services using DHCP Snooping binding entries generated based on Relay requests, such as IP Source Guard/802.1x authentication, cannot be deployed. Otherwise, users fail to access the Internet.

After the feature is enabled, the **ip dhcp snooping verify mac-address** command cannot be used. Otherwise, DHCP Relay requests will be discarded and as a result, users fail to obtain addresses.

Configuration Examples The following example enables DHCP Snooping to support the function of processing Relay requests.

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping check-giaddr
Ruijie(config)# end
```

Related Commands

Command	Description
show ip dhcp snooping	Displays the configuration information of the DHCP Snooping.

Platform Description N/A

10.5 ip dhcp snooping database write-delay

Use this command to configure the switch to write the dynamic user information of the DHCP Snooping binding database into the flash periodically.
Use the **no** form of this command to restore the default setting.
ip dhcp snooping database write-delay *time*
no ip dhcp snooping database write-delay *time*

Parameter Description

Parameter	Description
time	The interval at which the system writes the dynamic user information of the DHCP Snooping database into the flash

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide This function avoids loss of user information after restart. In that case, users need to obtain IP addresses again for normal communication.

Configuration Examples The following example sets the interval at which the switch writes the user information into the flash to 3600 seconds.

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping database write-delay 3600
Ruijie(config)# end
Ruijie# show ip dhcp snooping
Switch DHCP snooping status: ENABLE
DHCP snooping Verification of hwaddr field status: ENABLE
DHCP snooping database write-delay time: 3600
DHCP snooping option 82 status: DISABLE
DHCP Snooping Support Bootp bind status: ENABLE
Interface        Trusted          Rate limit (pps)
------------------------    -------     ---------------
```

Related Commands

Command	Description
show ip dhcp snooping	Displays the configuration information of the DHCP Snooping.

Platform Description N/A

10.6 ip dhcp snooping database write-to-flash

Use this command to write the dynamic user information of the DHCP binding database into flash in real time.

ip dhcp snooping database write-to-flash

Parameter Description

Parameter	Description

N/A	N/A

Defaults N/A

Command Mode Global configuration mode

Usage Guide This command is used to write the dynamic user information of the DHCP binding database into flash in real time.

Configuration Examples The following example writes the dynamic user information of the DHCP binding database into flash.

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping database write-to-flash
Ruijie(config)# end
Ruijie#
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10.7 ip dhcp snooping information option

Use this command to add option82 to the DHCP request message. Use the **no** form of this command to restore the default setting.

ip dhcp snooping information option [**standard-format**]

no ip dhcp snooping information option [**standard-format**]

Parameter Description

Parameter	Description
standard-format	The option82 uses the standard format.

Defaults This function is disabled by default,

Command Mode Global configuration mode

Usage Guide This command adds option82 to the DHCP request message based on which the DHCP server assigns IP address.

Configuration Examples The following example adds option82 to the DHCP request message.

```
Ruijie# configure terminal
```

```
Ruijie(config)# ip dhcp snooping information option
Ruijie(config)# end
Ruijie# show ip dhcp snooping
Switch DHCP snooping  status                 :   ENABLE
DHCP snooping  Verification of hwaddr status    :   ENABLE
DHCP snooping database write-delay time        :   0
DHCP snooping option 82 status                :   DISABLE
DHCP Snooping Support Bootp bind status: ENABLE
Interface             Trusted      Rate limit (pps)
------------------------ -------      ----------------
```

Related Commands

Command	Description
show ip dhcp snooping	Displays the DHCP Snooping configuration.

Platform Description N/A

10.8 ip dhcp snooping information option format remote-id

Use this command to set the option82 sub-option remote-id as the customized character string.
Use the **no** form of this command to restore the default setting.
ip dhcp snooping information option format remote-id { **string** *ascii-string* **| hostname** }
no ip dhcp snooping information option format remote-id { **string** *ascii-string* **| hostname** }

Parameter Description

Parameter	Description
string *ascii-string*	The content of the option82 remote-id extension format is customized character string.
hostname	The content of the option82 remote-id extension format hostname

Defaults This function is disabled by default,

Command Mode Global configuration mode

Usage Guide This command sets the remote-id in the option82 to be added to the DHCP request message as the customized character string. The DHCP server will assign the IP address according to the option82 information.

Configuration Examples The following example adds the option82 into the DHCP request packets with the content of remote-id being hostname.

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping information option format remote-id hostname
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10.9 ip dhcp snooping suppression

Use this command to set the port to be the suppression status.

Use the **no** form of this command to restore the default setting.

ip dhcp snooping suppression

no ip dhcp snooping suppression

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide This command denies all DHCP request messages under the port, that is, all the users under the port are prohibited to request addresses through DHCP.

Configuration Examples The following example sets **fastethernet** 0/2 to be in the suppression status.

```
Ruijie# configure terminal
Ruijie(config)# interface fastEthernet 0/2
Ruijie(config-if)# ip dhcp snooping suppression
Ruijie(config-if)# end
```

Related Commands

Command	Description
show ip dhcp snooping	Displays the DHCP Snooping configuration.

Platform Description N/A

10.10 ip dhcp snooping trust

Use this command to set the trusted ports.

Use the **no** form of this command to restore the default setting.

ip dhcp snooping trust

no ip dhcp snooping trust

Parameter Description

Parameter	Description
N/A	N/A

Defaults All ports are untrusted by default.

Command Mode Interface configuration mode

Usage Guide Use this command to set a port as a trusted port. The DHCP response messages received under the trust port are forwarded normally, but the response messages received under the untrusted port will be discarded.

Configuration Examples The following example sets **fastEthernet** *0/1* as a trusted port:

```
Ruijie# configure terminal
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip dhcp snooping trust
Ruijie(config-if)# end
Ruijie# show ip dhcp snooping
Switch DHCP snooping status: ENABLE
DHCP snooping Verification of hwaddr field status: DISABLE
DHCP snooping database write-delay time: 0 seconds
DHCP snooping option 82 status: ENABLE
DHCP Snooping Support Bootp bind status:ENABLE
Interface         Trusted           Rate limit (pps)
-----------------   -------          ----------------
FastEthernet0/1 yes               unlimited
```

Related Commands

Command	Description
show ip dhcp snooping	Displays the DHCP Snooping configuration.

Platform Description N/A

10.11 ip dhcp snooping verify mac-address

Use this command to check whether the source MAC address of the DHCP request message matches against the **client addr** field of the DHCP message.

Use the **no** form of this command to restore the default setting.

ip dhcp snooping verify mac-address
no ip dhcp snooping verify mac-address

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Global configuration mode

Usage Guide Use this command to enable checking the validity of the source MAC address of the DHCP request message. Once the function is enabled, the system will discard the DHCP request message that fails to pass the source MAC address check.

Configuration Examples The following example enables the check of the source MAC address of the DHCP request message.

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping verify mac-address
Ruijie(config)# end
Ruijie# show ip dhcp snooping
Switch DHCP snooping status: ENABLE
Verification of hwaddr field status: ENABLE
DHCP snooping database write-delay time: 0 seconds
DHCP snooping option 82 status: ENABLE
DHCP Snooping Support Bootp bind status: ENABLE
Interface       Trusted         Rate limit (pps)
```

Related Commands

Command	Description
show ip dhcp snooping	Displays the DHCP Snooping configuration.

Platform Description N/A

10.12 ip dhcp snooping vlan

Use this command to enable DHCP Snooping for the specific VLAN.
Use the **no** form of this command to restore the default setting.
ip dhcp snooping vlan {*vlan-rng* | { *vlan-min* [*vlan-max*] } }
no ip dhcp snooping vlan {*vlan-rng* | { *vlan-min* [*vlan-max*] } }

Parameter Description

Parameter	Description

vlan-rng	VLAN range of effective DHCP Snooping
vlan-min	Minimum VLAN of effective DHCP Snooping
vlan-max	Maximum VLAN of effective DHCP Snooping

Defaults By default, once the DHCP Snooping is enabled globally, it takes effect for all VLANs.

Command Mode Global configuration mode

Usage Guide Use this command to configure effective DHCP Snooping VLAN by character string.

Configuration Examples The following example enables the DHCP Snooping function in VLAN1000.

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping vlan 1000
Ruijie(config)# end
```

Related Commands

Command	Description
ip dhcp snooping	Enables DHCP Snooping globally.

Platform Description N/A

10.13 ip dhcp snooping vlan information option change-vlan-to vlan

Use this command to enable the option82 sub-option circuit and change the VLAN in the circuit-id into the specified VLAN.
Use the **no** form of this command to restore the default setting.
ip dhcp snooping vlan *vlan-id* **information option change-vlan-to vlan** *vlan-id*
no ip dhcp snooping vlan *vlan-id* **information option change-vlan-to vlan** *vlan-id*

Parameter Description

Parameter	Description
vlan-id	The ID of the VLAN to be replaced

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide With this command configured, the option82 is added to the DHCP request packets, the circuit-id in the option82 information is the specified VLAN and the DHCP server will assign the addresses according to the option82 information.

Configuration Examples The following adds the option82 to the DHCP request packets and changes the VLAN4094 in the option82 sub-option circuit-id to VLAN93:

```
Ruijie# configure terminal
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip dhcp snooping vlan 4094 information option
change-vlan-to vlan 4093
Ruijie(config-if)# end
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10.14 ip dhcp snooping vlan information option format-type circuit-id string

Use this command to configure the option82 sub-option circuit-id as user-defined (the storage format is ASCII) and to perform the packet forwarding. Use the **no** form of this command to restore the default setting.

ip dhcp snooping vlan *vlan-id* **information option format-type circuit-id string** *ascii-string*

no ip dhcp snooping vlan *vlan-id* **information option format-type circuit-id string** *ascii-string*

Parameter Description

Parameter	Description
vlan-id	The VLAN where the DHCP request packets are
ascii-string	The user-defined content to fill to the Circuit ID

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide This command is used to add the option82 to the DHCP request packets. The content of the sub-option circuit-id is customized, and the DHCP server will assign the addresses according the option82 information.

Configuration Examples The following example adds the option82 to the DHCP request packets with the content of the sub-option circuit-id being *port-name*.

```
Ruijie# configure terminal
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip dhcp snooping vlan 4094 information option format-type
```

```
circuit-id string port-name
Ruijie(config-if)# end
```

Related Commands

Command	Description
N/A	N/A

Platform Description This command is supported on all switches.

10.15 ip dhcp snooping vlan max-user

Use this command to set the maximum number of users bound with the VLAN. Use the **no** form of this command to restore the default setting.

ip dhcp snooping vlan *vlan-word* **max-user** *user-number*

no ip dhcp snooping vlan *vlan-word* **max-user** *user-number*

Parameter Description

Parameter	Description
vlan-word	The VLAN range.
user-number	The maximum number of users bound with the VLAN.

Defaults The limit for the number of users bound with the VLAN is disabled by default.

Command Mode Interface configuration mode

Usage Guide Use this command to set the maximum number of users bound with the VLAN. This function combined with the corresponding topology can prevent illegal DHCP packet attacks.

Configuration Examples The following example sets the maximum number of users bound with VLAN 1-10 and VLAN 20 to 30 respectively.

```
Ruijie# configure terminal
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# ip dhcp snooping vlan 1-10,20 max-user
30
Ruijie(config-if-GigabitEthernet 0/1)# end
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

10.16 renew ip dhcp snooping database

Use this command to import the information in current flash to the DHCP Snooping binding database manually as needed.

renew ip dhcp snooping database

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to import the backup file information to the DHCP Snooping database in real time.

Configuration Examples The following example imports the backup file information to the DHCP Snooping database.

```
Ruijie# renew ip dhcp snooping database
```

Related Commands

Command	Description
N/A	N/A

Platform Description This command is supported on all switches.

10.17 show ip dhcp snooping

Use this command to display the DHCP Snooping configuration.

show ip dhcp snooping

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the DHCP Snooping configuration.

```
Ruijie# show ip dhcp snooping
Switch DHCP snooping status :ENABLE
Verification of hwaddr field status :DISABLE
DHCP snooping database write-delay time: 0 seconds
DHCP snooping option 82 status: ENABLE
DHCP snooping Support Bootp bind status: ENABLE
Interface                Trusted    Rate limit (pps)
-----------------------  -------    ------------
```

Related Commands

Command	Description
ip dhcp snooping	Enables the DHCP Snooping globally.
ip dhcp snooping verify mac-address	Enables the check of source MAC address of DHCP Snooping packets.
ip dhcp snooping write-delay	Sets the interval of writing user information to the backup file periodically.
ip dhcp snooping information option	Adds option82 to the DHCP request message.
ip dhcp snooping bootp-bind	Enables the DHCP Snooping bootp bind function.
ip dhcp snooping trust	Sets the port as a trust port.

Platform Description N/A

10.18 show ip dhcp snooping binding

Use this command to display the information of the DHCP Snooping binding database.

show ip dhcp snooping binding

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the information of the DHCP Snooping binding database.

```
Ruijie# show ip dhcp snooping binding
```

```
Total number of bindings: 1
NO.   MACADDRESS        IPADDRESS      LEASE(SEC)   TYPE         VLAN
INTERFACE
----- ------------------ --------------- ------------ ------------- -----
--------------------
1     0000.0000.0001     1.1.1.1        78128        DHCP-Snooping 1
GigabitEthernet 0/1
```

Related Commands

Command	Description
ip dhcp snooping binding	Adds the static user information to the DHCP Snooping database.
clear ip dhcp snooping binding	Clears the dynamic user information from the DHCP Snooping binding database.

Platform Description N/A

11 NFPP Commands

11.1 arp-guard attack-threshold

Use this command to set the global attack threshold. When the packet rate exceeds the attack threshold, the attack occurs. Use the **no** or **default** form of this command to restore the default setting.

arp-guard attack-threshold { **per-src-ip** | **per-src-mac** | **per-port** } *pps*

no arp-guard attack-threshold { **per-src-ip** | **per-src-mac** | **per-port** }

default arp-guard attack-threshold { **per-src-ip** | **per-src-mac** | **per-port** }

Parameter Description

Parameter	Description
per-src-ip	Sets the attack threshold for each source IP address.
per-src-mac	Sets the attack threshold for each source MAC address.
per-port	Sets the attack threshold for each port.
pps	Sets the attack threshold, in the range from 1 to 19999 in unit of pps.

Defaults By default, the attack threshold for each source IP address and source MAC address is 3000pps; and the attack threshold for each port is 8000pps.

Command Mode NFPP configuration mode.

Usage Guide The attack threshold shall be equal to or greater than the rate-limit threshold.

Configuration Examples The following example sets the global attack threshold.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard attack-threshold per-src-ip 2
Ruijie(config-nfpp)# arp-guard attack-threshold per-src-mac 3
Ruijie(config-nfpp)# arp-guard attack-threshold per-port 50
```

Related Commands

Command	Description
nfpp arp-guard policy	Displays the rate-limit threshold and attack threshold.
show nfpp arp-guard summary	Displays the configuration.
show nfpp arp-guard hosts	Displays the monitored host.
clear nfpp arp-guard hosts	Clears the isolated host.

Platform Description N/A

11.2 arp-guard enable

Use this command to enable the anti-ARP guard function globally. Use the **no** or **default** form of this command to restore the default setting.

arp-guard enable

no arp-guard enable

default arp-guard enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode NFPP configuration mode.

Usage Guide N/A

Configuration Examples The following example enables the anti-ARP guard function globally.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard enable
```

Related Commands

Command	Description
nfpp arp-guard enable	Enables the anti-ARP attack on the interface.
show nfpp arp-guard summary	Displays the configuration.

Platform Description N/A

11.3 arp-guard isolate-period

Use this command to set the arp-guard isolate time globally. Use the **no** or **default** form of this command to restore the default setting.

arp-guard isolate-period { *seconds* | **permanent** }

no arp-guard isolate-period

default arp-guard isolate-period

Parameter Description

Parameter	Description
seconds	Sets the isolate time. The value is 0, or in the range from 30 to 86400 in the unit of seconds.

permanent	Permanent isolation.

Defaults The default isolate time is 0, which means no isolation.

Command Mode NFPP configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the arp-guard isolate time globally to 180 seconds.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard isolate-period 180
```

Related Commands

Command	Description
nfpp arp-guard isolate-period	Sets the isolate time on the interface.
show nfpp arp-guard summary	Displays the configuration.

Platform Description N/A

11.4 arp-guard isolate-forwarding enable

Use this command to enable packet forwarding through NFPP isolation. Use the **no** form of this command to disable this function. Use the **default** form of this command to restore the default setting.

arp-guard isolate-forwarding enable

no arp-guard isolate-forwarding enable

default arp-guard isolate-forwarding enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode NFPP configuration mode

Usage Guide N/A

Configuration Examples The following example enables packet forwarding through NFPP isolation.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard isolate-forwarding enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.5 arp-guard monitored-host-limit

Use this command to set the maxmum monitored host number. Use the **no** or **default** form of this command to restore the default setting.

arp-guard monitored-host-limit *number*

no arp-guard monitored-host-limit

default arp-guard monitored-host-limit

Parameter Description

Parameter	Description
number	The maximum monitored host number, in the range from 1 to 4294967295.

Defaults The default is 20000.

Command Mode NFPP configuration mode

Usage Guide If the monitored host number has reached the default 20000, the administrator shall set the max-number smaller than 20000 and it will prompt the message that %ERROR: The value that you configured is smaller than current monitored hosts 20000, please clear a part of monitored hosts. to remind the administrator of the invalid configuration and removing the monitored hosts.
When the maximum monitored host number has been exceeded, it prompts the message that % NFPP_ARP_GUARD-4-SESSION_LIMIT: Attempt to exceed limit of 20000 monitored hosts.to remind the administrator.

Configuration Examples The following example sets the maxmum monitored host number to 200.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard monitored-host-limit 200
```

Related Commands

Command	Description
show nfpp arp-guard summary	Displays the configuration.

Platform Description N/A

11.6 arp-guard monitor-period

Use this command to configure the arp guard monitor time. Use the **no** or **default** form of this command to restore the default setting.

arp guard monitor-period *seconds*

no arp-guard monitor-period

default arp-guard monitor-period

Parameter Description

Parameter	Description
seconds	Sets the monitor time, in the range from 180 to 86400 in the unit of seconds.

Defaults The default is 600.

Command Mode NFPP configuration mode.

Usage Guide When the attacker is detected, if the isolate period is 0, the attacker will be monitored by the software and the timeout time will be the monitor period. During the software monitoring, if the isolate period is not 0, the software-monitored attacker will be auto-isolated by the hardware and the timeout time will be the isolate period. The monitor period is valid with the isolate period 0.

If the isolate period has changed to be 0, the attackers on the interface will be removed rather than being monitored by the software.

Configuration Examples The following example sets the arp guard monitor time to 180 seconds.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard monitor-period 180
```

Related Commands

Command	Description
show nfpp arp-guard summary	Displays the configuration.
show nfpp arp-guard hosts	Displays the monitored host list.
clear nfpp arp-guard hosts	Clears the isolated host.

Platform Description N/A

11.7 arp-guard rate-limit

Use this command to set the arp guard rate limit. Use the **no** or **default** form of this command to restore the default setting.

arp-guard rate-limit { **per-src-ip** | **per-src-mac** | **per-port** } *pps*

no arp-guard rate-limit { **per-src-ip | per-src-mac | per-port** }
default arp-guard rate-limit { **per-src-ip | per-src-mac | per-port** }

Parameter Description

Parameter	Description
per-src-ip	Setsthe rate limit for each source IP address.
per-src-mac	Sets the rate limit for each source MAC address.
per-port	Sets the rate limit for each port.
pps	Sets the rate limit, in the range of 1 to 19999

Defaults The default rate limit for each source IP address and MAC address is 30pps; the default rate limit for each port is 5000pps.

Command Mode NFPP configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the arp guard rate limit.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard rate-limit per-src-ip 2
Ruijie(config-nfpp)# arp-guard rate-limit per-src-mac 3
Ruijie(config-nfpp)# arp-guard rate-limit per-port 50
```

Related Commands

Command	Description
nfpp arp-guard policy	Sets the rate limit and the attack threshold.
show nfpp arp-guard summary	Displays the configuration.

Platform Description N/A

11.8 arp-guard ratelimit-forwarding enable

Use this command to set the port based arp guard rate limit. Use the **no** form of this command to disable this function. Use the **default** form of this command to restore the default setting.
arp-guard ratelimit-forwarding enable
no arp-guard ratelimit-forwarding enable
default arp-guard ratelimit-forwarding enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode NFPP configuration mode

Usage Guide N/A

Configuration Examples The following example sets the port based arp guard rate limit..

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard ratelimit-forwarding enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.9 arp-guard scan-threshold

Use this command to set the global scan threshold. Use the **no** or **default** form of this command to restore the default setting.

arp-guard scan-threshold *pkt-cnt*

no arp-guard scan-threshold

default arp-guard scan-threshold

Parameter Description

Parameter	Description
pkt-cnt	Sets the scan threshold, in the range from 1 to 19999.

Defaults The default scan threshold is 100.

Command Mode NFPP configuration mode

Usage Guide The scanning may occur on the condition that:
more than 15 packets are received within 10 seconds;
the source MAC address for the link layer is constant while the source IP address is uncertain;
the source MAC and IP address for the link layer is constant while the destination IP address is uncertain.

Configuration Examples The following example sets the global scan threshold to 20pps.

```
Ruijie(config)# nfpp
```

```
Ruijie(config-nfpp)# arp-guard scan-threshold 20
```

Related Commands

Command	Description
nfpp arp-guard scan-threshold	Sets the scan threshold on the port.
show nfpp arp-guard summary	Displays the configuration.
show nfpp arp-guard scan	Displays the ARP guard scan table.
clear nfpp arp-guard scan	Clears the ARP guard scan table.

Platform Description N/A

11.10 clear nfpp arp-guard hosts

Use this command to clear the monitored host isolation.

clear nfpp arp-guard hosts [**vlan** *vid*] [**interface** *interface-id*] [*ip-address* | *mac-address*]

Parameter Description

Parameter	Description
vid	Sets the VLAN ID.
interface-id	Sets the interface name and number.
ip-address	Sets the IP address.
mac-address	Sets the MAC address.

Defaults N/A.

Command Mode Privileged EXEC mode.

Usage Guide Use this command without the parameter to clear all monitored hosts.

Configuration Examples The following example clears the monitored host isolation.

```
Ruijie# clear nfpp arp-guard hosts vlan 1 interface g0/1
```

Related Commands

Command	Description
arp-guard attack-threshold	Sets the global attack threshold.
nfpp arp-guard policy	Sets the limit threshold and attack threshold.
show nfpp arp-guard hosts	Displays the monitored host.

Platform Description N/A

11.11 clear nfpp arp-guard scan

Use this command to clear ARP scanning table.

clear nfpp arp-guard scan

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example clears ARP scanning table.

```
Ruijie# clear nfpp arp-guard scan
```

Related Commands

Command	Description
arp-guard attack-threshold	Sets the global attack threshold.
nfpp arp-guard policy	Sets the attack threshold.
show nfpp arp-guard scan	Displays the ARP scanning table.

Platform Description N/A

11.12 clear nfpp define *name* hosts

Use this command to clear the monitored hosts. If the host is isolated, you need to disisolate it.

clear nfpp define *name* **hosts** [**vlan** *vid*] [**interface** *interface-id*] [*ip-address*] [*mac-address*] [*ipv6-address*]

Parameter Description

Parameter	Description
name	Defines guard name
vid	VLAN ID
interface-id	Interface name
ip-address	IP address
ipv6-address	IPv6 address

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide Use this command without the parameter to clear all monitored hosts in the self-defined range.

Configuration Examples The following example clears the monitored hosts.

```
Ruijie# clear nfpp define tcp hosts vlan 1 interface g 0/1
```

Related Commands

Command	Description
show nfpp define hosts	Displays the isolated hosts.

Platform Description N/A

11.13 clear nfpp dhcp-guard hosts

Use this command to clear the monitored host isolation.

clear nfpp dhcp-guard hosts [**vlan** *vid*] [interface *interface-id*] [*mac-address*]

Parameter Description

Parameter	Description
vid	Sets the VLAN ID.
interface-id	Sets the interface name and number.
mac-address	Sets the MAC address.

Defaults N/A.

Command Mode Privileged EXEC mode.

Usage Guide Use this command without the parameter to clear all monitored hosts.

Configuration Examples The following example clears the monitored host isolation.

```
Ruijie# clear nfpp dhcp-guard hosts vlan 1 interface g0/1
```

Related Commands

Command	Description
dhcp-guard attack-threshold	Sets the global attack threshold.
nfpp dhcp-guard policy	Sets the limit threshold and attack threshold.
show nfpp dhcp-guard hosts	Displays the monitored host.

Platform Description N/A

11.14 clear nfpp dhcpv6-guard hosts

Use this command to clear the monitored host isolation.

clear nfpp dhcpv6-guard hosts [**vlan** *vid*] [**interface** *interface-id*] [*mac-address*]

Parameter Description

Parameter	Description
vid	Sets the VLAN ID.
interface-id	Sets the interface name and number.
mac-address	Sets the MAC address.

Defaults N/A.

Command Mode Privileged EXEC mode.

Usage Guide Use this command without the parameter to clear all monitored hosts

Configuration Examples The following example clears the monitored host isolation.

```
Ruijie# clear nfpp dhcpv6-guard hosts vlan 1 interface g0/1
```

Related Commands

Command	Description
dhcpv6-guard attack-threshold	Sets the global attack threshold.
nfpp dhcpv6-guard policy	Sets the limit threshold and attack threshold.
show nfpp dhcpv6-guard hosts	Displays the monitored host.

Platform Description N/A

11.15 clear nfpp icmp-guard hosts

Use this command to clear the monitored host isolation.

clear nfpp icmp-guard hosts [**vlan** *vid*] [**interface** *interface-id*] [*ip-address*]

Parameter Description

Parameter	Description
vid	Sets the VLAN ID.
interface-id	Sets the interface name and number.
ip-address	Sets the IP address.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide Use this command without the parameter to clear all monitored hosts.

Configuration Examples The following example clears the monitored host isolation.

```
Ruijie# clear nfpp icmp-guard hosts vlan 1 interface g0/1
```

Related Commands

Command	Description
icmp-guard attack-threshold	Sets the global attack threshold.
nfpp icmp-guard policy	Sets the limit threshold and attack threshold.
show nfpp icmp-guard hosts	Displays the monitored host.

Platform Description N/A

11.16 clear nfpp ip-guard hosts

Use this command to clear the monitored host isolation.

clear nfpp ip-guard hosts [**vlan** *vid*] [**interface** *interface-id*] [*ip-address*]

Parameter Description

Parameter	Description
vid	Sets the VLAN ID.
interface-id	Sets the interface name and number.
ip-address	Sets the IP address.

Defaults N/A.

Command Mode Privileged EXEC mode.

Usage Guide Use this command without the parameter to clear all monitored hosts.

Configuration Examples The following example clears the monitored host isolation.

```
Ruijie# clear nfpp ip-guard hosts vlan 1 interface g0/1
```

Related Commands

Command	Description

ip-guard attack-threshold	Sets the global attack threshold.
nfpp ip-guard policy	Sets the limit threshold and attack threshold.
show nfpp ip-guard hosts	Displays the monitored host.

Platform Description N/A

11.17 clear nfpp nd-guard hosts

Use this command to remove the speed limit on the host.

clear nfpp nd-guard hosts [**vlan** *vid*] [**interface** *interface-id*]

Parameter Description

Parameter	Description
vid	Sets the VLAN ID.
interface-id	Sets the interface name and number.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide This command without any parameter is used to remove speed limit on all monitored hosts.

Configuration Examples The following example removes speed limit on interface g0/1 in VLAN 1..

```
Ruijie# clear nfpp nd-guard hosts vlan 1 interface g0/1
```

Prompt Messages N/A

Platform Description N/A

11.18 clear nfpp log

Use this command to clear the NFPP log buffer area.

clear nfpp log

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example clears the NFPP log buffer area.

```
Ruijie# clear nfpp log
```

Related Commands

Command	Description
show nfpp log	Displays the NFPP log configuration or the log buffer area.

Platform Description N/A

11.19 cpu-protect sub-interface { manage | protocol | route } percent

Use this command to configure the percent value of each type of packets occupied in the buffer area. Use the **no** or **default** form of this command to restore the default setting.

cpu-protect sub-interface { **manage** | **protocol** | **route** } **percent** *percent_vaule*

no cpu-protect sub-interface {*manage*|*protocol*|*route*} **percent**

default cpu-protect sub-interface {*manage*|*protocol*|*route*} **percent**

Parameter Description

Parameter	Description
percent_value	The percent value, in the range from 1 to 100.

Defaults The default percent values of each type of packets occupied in the buffer area are:
Manage packets: 30;
Route packets: 20;
Protocol packets: 45.

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the percent value of management packets in the buffer area to 60.

```
Ruijie(config)# cpu-protect sub-interface manage
percent 60
```

Related Commands	Command	Description
	cpu-protect sub-interface { **manage** | **protocol** | **route** } pps	Configures the traffic bandwidth of each type of packets.

Platform Description N/A

11.20 cpu-protect sub-interface { manage | protocol | route } pps

Use this command to configure the traffic bandwidth of each type of packets. Use the **no** or **default** form of this command to restore the default setting.

cpu-protect sub-interface { **manage** | **protocol** | route} **pps** *pps_vaule*

no cpu-protect sub-interface { *manage* | *protocol* | *route* } **pps**

default cpu-protect sub-interface { *manage* | *protocol* | *route* } **pps**

Parameter Description	Parameter	Description
	pps_value	The rate limit threshold, in the range from 1 to 8192

Defaults The default traffic bandwidths of each type of packets are:
Manage packets: 3000pps;
Route packets: 3000pps;
Protocol packets: 3000pps.

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the traffic bandwidth of management packets to 2000 pps.

```
Ruijie(config)# cpu-protect sub-interface manage pps 2000
```

Related Commands	Command	Description
	cpu-protect sub-interface { **manage** | **protocol** | **route** } **percent**	Configures the percent value of each type of packets occupied in the buffer area.

Platform Description N/A

11.21 define

Use this command to define the anti-attack type.

Use the **no** or **default** form of this command to restore the default setting.

define *name*

no define *name*

default define *name*

Parameter Description

Parameter	Description
name	Name of the user-defined anti-attack type.

Defaults N/A

Command Mode NFPP configuration mode

Usage Guide Use this command to define the anti-attack type.

Configuration Examples The following example creates the user-defined anti-attack type.

```
Ruijie(config)# nfppRuijie(config-nfpp)# define tcp
Ruijie(config-nfpp-define)#
```

Related Commands

Command	Description
show nfpp define summary	Displays the defined anti-attack configuration.

Platform Description N/A

11.22 define enable

Use this command to enable the user-defined anti-attack globally. Use the **no** or **default** form of this command to restore the default setting.

define *name* **enable**

no define *name* **enable**

default define *name* **enable**

Parameter Description

Parameter	Description
name	Defines guard name

Defaults This function is disabled by default.

Command Mode NFPP configuration mode.

Usage Guide This command takes effect only after the match, rate-limit and attack-threshold have been configured.

Configuration Examples The following example enabled the user-defined anti-attack globally.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)#define tcp enable
```

Related Commands

Command	Description
show nfpp define summary	Displays the user-defined anti-attack configuration

Platform Description N/A

11.23 dhcp-guard attack-threshold

Use this command to set the global attack threshold. When the packet rate exceeds the attack threshold, the attack occurs. Use the **no** or **default** form of this command to restore the default setting.

dhcp-guard attack-threshold { **per-src-mac** | **per-port** } *pps*

no dhcp-guard attack-threshold { **per-src-mac** | **per-port** }

default dhcp-guard attack-threshold { **per-src-mac** | **per-port** }

Parameter Description

Parameter	Description
per-src-mac	Sets the attack threshold for each source MAC address.
per-port	Sets the attack threshold for each port.
pps	Sets the attack threshold, in pps. The valid range is 1 to 19999.

Defaults The default settings are as follows:

For the 11.X CM supervisor module, the attack thresholds for each source MAC address and each port are 10 pps and 1500 pps respectively.

For the 11.X CMII supervisor module, the attack thresholds for each source MAC address and each port are 10 pps and 10000 pps respectively.

Command Mode NFPP configuration mode

Usage Guide N/A

Configuration Examples The following example sets the global attack threshold.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard attack-threshold per-src-mac 15
Ruijie(config-nfpp)# dhcp-guard attack-threshold per-port 200
```

Related Commands

Command	Description
nfpp dhcp-guard policy	Displays the rate-limit threshold and attack threshold.
show nfpp dhcp-guard summary	Displays the configuration.
show nfpp dhcp-guard hosts	Displays the monitored host list.
clear nfpp dhcp-guard hosts	Clears the monitored host.

Platform Description N/A

11.24 dhcp-guard enable

Use this command to enable the DHCP anti-attack function. Use the **no** or **default** form of this command to restore the default setting.

dhcp-guard enable

no dhcp-guard enable

default dhcp-guard enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode NFPP configuration mode.

Usage Guide N/A

Configuration Examples The following example enables the DHCP anti-attack function.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.25 dhcp-guard isolate-period

Use this command to set the isolate time globally. Use the **no** or **default** form of this command to restore the default setting.

dhcp-guard isolate-period { **seconds** | **permanent** }

no dhcp-guard isolate-period

default dhcp-guard isolate-period

Parameter Description

Parameter	Description
seconds	Sets the isolate time. The value is 0 or in the range from 30 to 86400 in the unit of seconds.
permanent	Permanent isolation.

Defaults The default isolate time is 0, which means no isolation.

Command Mode NFPP configuration mode

Usage Guide The isolate period can be configured globally or based on the interface. For one interface, if the isolate period is not set based on the interface, the global value shall be adopted; or the interface-based isolate period shall be adopted.

Configuration Examples The following example sets the isolate time globally to 180 seconds.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard isolate-period 180
```

Related Commands

Command	Description
nfpp dhcp-guard isolate-period	Sets the isolate time on the interface.
show nfpp dhcp-guard summary	Displays the configuration.

Platform Description N/A

11.26 dhcp-guard monitored-host-limit

Use this command to set the maxmum monitored host number. Use the **no** or **default** form of this command to restore the default setting.

dhcp-guard monitored-host-limit *number*

no dhcp-guard monitored-host-limit
default dhcp-guard monitored-host-limit

Parameter Description

Parameter	Description
number	The maximum monitored host number, in the range from 1 to 4294967295.

Defaults The default is 20000.

Command Mode NFPP configuration mode

Usage Guide If the monitored host number has reached the default 20000, the administrator shall set the max-number smaller than 20000 and it will prompt the message that %ERROR: The value that you configured is smaller than current monitored hosts 20000, please clear a part of monitored hosts. to remind the administrator of the invalid configuration and removing the monitored hosts.
When the maximum monitored host number has been exceeded, it prompts the message that % NFPP_ARP_GUARD-4-SESSION_LIMIT: Attempt to exceed limit of 20000 monitored hosts.to remind the administrator.

Configuration Examples The following example sets the maxmum monitored host number to 200.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard monitored-host-limit 200
```

Related Commands

Command	Description
show nfpp dhcp-guard summary	Displays the configuration.

Platform Description N/A

11.27 dhcp-guard monitor-period

Use this command to configure the monitor time. Use the **no** or **default** form of this command to restore the default setting.
dhcp-guard monitor-period *seconds*
no dhcp-guard monitor-period
default dhcp-guard monitor-period

Parameter Description

Parameter	Description
seconds	Sets the monitor time, in the range from 180 to 86400 in the unit of seconds.

Defaults The default is 600.

Command Mode NFPP configuration mode.

Usage Guide When the attacker is detected, if the isolate period is 0, the attacker will be monitored by the software and the timeout time will be the monitor period. During the software monitoring, if the isolate period is not 0, the software-monitored attacker will be auto-isolated by the hardware and the timeout time will be the isolate period. The monitor period is valid with the isolate period 0.
If the isolate period has changed to be 0, the attackers on the interface will be removed rather than being monitored by the software.

Configuration Examples The following example sets the monitor time to 180 seconds.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard monitor-period 180
```

Related Commands

Command	Description
show nfpp dhcp-guard summary	Displays the configuration.
show nfpp dhcp-guard hosts	Displays the monitored host list.
clear nfpp dhcp-guard hosts	Clears the isolated host.

Platform Description N/A

11.28 dhcp-guard rate-limit

Use this command to set the rate-limit threshold globally. Use the **no** or **default** form of this command to restore the default setting.
dhcp-guard rate-limit { **per-src-mac | per-port** } *pps*
no dhcp-guard rate-limit { **per-src-mac | per-port** }
default dhcp-guard rate-limit { **per-src-mac | per-port** }

Parameter Description

Parameter	Description
per-src-mac	Sets the rate limit for each source MAC address.
per-port	Sets the rate limit for each port.
pps	Sets the rate limit, in the range of 1 to 19999

Defaults The default settings are as follows:
For the 11.X CM supervisor module, the rate-limit thresholds for each source MAC address and each port are 5 pps and 1200 pps respectively.
For the 11.X CMII supervisor module, the rate-limit thresholds for each source MAC address and

each port are 5 pps and 8000 pps respectively.

Command Mode NFPP configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the rate-limit threshold globally.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard rate-limit per-src-mac 8
Ruijie(config-nfpp)# dhcp-guard rate-limit per-port 100
```

Related Commands

Command	Description
nfpp dhcp-guard policy	Sets the rate limit and the attack threshold.
show nfpp dhcp-guard summary	Displays the configuration.

Platform Description N/A

11.29 dhcpv6-guard attack-threshold

Use this command to set the global attack threshold. When the packet rate exceeds the attack threshold, the attack occurs. Use the **no** or **default** form of this command to restore the default setting.

dhcpv6-guard attack-threshold { **per-src-mac** | **per-port** } *pps*

no dhcpv6-guard attack-threshold {**per-src-mac** | **per-port**}

default dhcpv6-guard attack-threshold { **per-src-mac** | **per-port**}

Parameter Description

Parameter	Description
per-src-mac	Sets the attack threshold for each source MAC address.
per-port	Sets the attack threshold for each port.
pps	Sets the attack threshold, in the range is from 1 to 19999 pps.

Defaults The default settings are as follows:

For the 11.X CM supervisor module, the attack thresholds for each source MAC address and each port are 10 pps and 1500 pps respectively.

For the 11.X CMII supervisor module, the attack thresholds for each source MAC address and each port are 10 pps and 10000 pps respectively.

Command Mode NFPP configuration mode.

Usage Guide N/A.

Configuration Examples The following example sets the global attack threshold.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcpv6-guard attack-threshold per-src-mac 15
Ruijie(config-nfpp)# dhcpv6-guard attack-threshold per-port 200
```

Related Commands

Command	Description
nfpp dhcpv6-guard policy	Displays the rate-limit threshold and attack threshold.
show nfpp dhcpv6-guard summary	Displays the configuration.
show nfpp dhcpv6-guard hosts	Displays the monitored host list.
clear nfpp dhcpv6-guard hosts	Clears the monitored host.

Platform Description N/A

11.30 dhcpv6-guard enable

Use this command to enable the DHCPv6 anti-attack function. Use the **no** or **default** form of this command to restore the default setting.

dhcpv6-guard enable

no dhcpv6-guard enable

default dhcpv6-guard enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode NFPP configuration mode.

Usage Guide N/A

Configuration Examples The following example enables the DHCPv6 anti-attack function globally.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcpv6-guard enable
```

Related Commands

Command	Description

N/A	N/A

Platform Description N/A

11.31 dhcpv6-guard monitored-host-limit

Use this command to set the maxmum monitored host number. Use the **no** or **default** form of this command to restore the default setting.

dhcpv6-guard monitored-host-limit *number*

no dhcpv6-guard monitored-host-limit

default dhcpv6-guard monitored-host-limit

Parameter Description

Parameter	Description
number	The maximum monitored host number, in the range from 1 to 4294967295.

Defaults The default is 20000

Command Mode NFPP configuration mode

Usage Guide If the monitored host number has reached the default 20000, the administrator shall set the max-number smaller than 20000 and it will prompt the message that %ERROR: The value that you configured is smaller than current monitored hosts 20000, please clear a part of monitored hosts. to remind the administrator of the invalid configuration and removing the monitored hosts.
When the maximum monitored host number has been exceeded, it prompts the message that % NFPP_DHCPV6_GUARD-4-SESSION_LIMIT: Attempt to exceed limit of 20000 monitored hosts.to remind the administrator.

Configuration Examples The following example sets the maxmum monitored host number to200.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcpv6-guard monitored-host-limit 200
```

Related Commands

Command	Description
show nfpp dhcpv6-guard summary	Displays the cconfiguration.

Platform Description N/A

11.32 dhcpv6-guard monitor-period

Use this command to configure the monitor time. Use the **no** or **default** form of this command to restore the default setting.

dhcpv6-guard monitor-period *seconds*

no dhcpv6-guard monitor-period

default dhcpv6-guard monitor-period

Parameter Description

Parameter	Description
seconds	Sets the monitor time, in the range from 180 to 86400 in the unit of seconds.

Defaults The default is 600.

Command Mode NFPP configuration mode.

Usage Guide When the attacker is detected, if the isolate period is 0, the attacker will be monitored by the software and the timeout time will be the monitor period. During the software monitoring, if the isolate period is not 0, the software-monitored attacker will be auto-isolated by the hardware and the timeout time will be the isolate period. The monitor period is valid with the isolate period 0.

If the isolate period has changed to be 0, the attackers on the interface will be removed rather than being monitored by the software.

Configuration Examples The following example sets the monitor time to 180 seconds.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcpv6-guard monitor-period 180
```

Related Commands

Command	Description
show nfpp dhcpv6-guard summary	Displays the configuration.
show nfpp dhcpv6-guard hosts	Displays the monitored host list.
clear nfpp dhcpv6-guard hosts	Clears the isolated host.

Platform Description N/A

11.33 dhcpv6-guard rate-limit

Use this command to set the rate-limit threshold globally. Use the **no** or **default** form of this command to restore the default setting.

dhcpv6-guard rate-limit { **per-src-mac** | **per-port** } *pps*

no dhcpv6-guard rate-limit { **per-src-mac** | **per-port** }
default dhcpv6-guard rate-limit { **per-src-mac** | **per-port** }

Parameter Description

Parameter	Description
per-src-mac	Sets the rate limit for each source MAC address.
per-port	Sets the rate limit for each port.
pps	Sets the rate limit, in the range from 1 to 19999.

Defaults The default settings are as follows:
For the 11.X CM supervisor module, the rate-limit thresholds for each source MAC address and each port are 5 pps and 1200 pps respectively.
For the 11.X CMII supervisor module, the rate-limit thresholds for each source MAC address and each port are 5 pps and 8000 pps respectively.

Command Mode NFPP configuration mode

Usage Guide N/A

Configuration Examples The following example sets the rate-limit threshold globally.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcpv6-guard rate-limit per-src-mac 8
Ruijie(config-nfpp)# dhcpv6-guard rate-limit per-port 100
```

Related Commands

Command	Description
nfpp dhcpv6-guard policy	Sets the rate limit and the attack threshold.
show nfpp dhcpv6-guard summary	Displays the configuration.

Platform Description N/A

11.34 global-policy

Use this command to set the rate-limit threshold and attack threshold based on the host or port. Use the **no** or **default** form of this command to restore the default setting.
global-policy { **per-src-mac** | **per-src-ip** | **per-port** } *rate-limit-pps attack-threshold-pps*
no global-policy { **per-src-mac** | **per-src-ip** | **per-port** }
default global-policy { **per-src-mac** | **per-src-ip** | **per-port** }

Parameter Description

Parameter	Description

per-src-ip	Performs the rate statistics based on the source IP / VID and port.
per-src-mac	Performs the rate statistics based on the source MAC / VID and port.
per-port	Performs the rate statistics based on each physical port of receiving the packets.
rate-limit-pps	Sets the rate-limit threshold.
attack-threshold-pps	Sets the attack threshold.

Defaults N/A

Command Mode NFPP define configuration mode.

Usage Guide To create a user-defined anti-attack type, the classification rule for the rate statistics must be specified, that is, recognize the host based on the source IP address/ source MAC address for the user-defined packets rate statistics based on the user / port and specify the rate-limit threshold and attack threshold for each classification. The rate-limit threshold shall be equal to or greater than the attack threshold. If the rate is greater than the rate-limit threshold, the packets that meet this classification rule will be discarded. If the rate exceeds the attack threshold, the user will be regarded as an attacker. The log will be printed and the trap will be sent.

Configuration Examples The following example sets the rate-limit threshold and attack threshold based on the host or port.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# nfpp define tcp
Ruijie(config-nfpp-define)# global-policy per-src-ip 10  20
Ruijie(config-nfpp-define)# global-policy per-port 100  200
```

Related Commands

Command	Description
nfpp define *name* **policy**	Sets the rate-limit threshold and attack threshold.
show nfpp define summary	Displays the user-defined anti-attack configuration

Platform Description N/A

11.35 icmp-guard attack-threshold

Use this command to set the global attack threshold. When the packet rate exceeds the attack threshold, the attack occurs. Use the **no** or **default** form of this command to restore the default setting.

icmp-guard attack-threshold { **per-src-ip** | **per-port** } *pps*

no icmp-guard attack-threshold { **per-src-ip** | **per-port** }

default icmp-guard attack-threshold { **per-src-ip** | **per-port** }

Parameter Description

Parameter	Description
per-src-ip	Sets the attack threshold for each source IP address.
per-port	Sets the attack threshold for each port.
pps	Sets the attack threshold, in the range from 1 to 19999 in the unit of pps.

Defaults The default settings are as follows:
For the 11.X CM supervisor module, the attack thresholds for each source IP address and each port are 2000 pps and 4000 pps respectively.
For the 11.X CMII supervisor module, the attack thresholds for each IP MAC address and each port are 2500 pps and 4500 pps respectively.

Command Mode NFPP configuration mode.

Usage Guide N/A.

Configuration Examples The following example sets the global attack threshold.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard attack-threshold per-src-ip 600
Ruijie(config-nfpp)# icmp-guard attack-threshold per-port 1200
```

Related Commands

Command	Description
nfpp icmp-guard policy	Displays the rate-limit threshold and attack threshold.
show nfpp icmp-guard summary	Displays the configuration.
show nfpp icmp-guard hosts	Displays the monitored host list.
clear nfpp icmp-guard hosts	Clears the monitored host.

Platform Description N/A

11.36 icmp-guard enable

Use this command to enable the ICMP anti-attack function.Use the **no** or **default** form of this command to restore the default setting.
icmp-guard enable
no icmp-guard enable
default icmp-guard enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode NFPP configuration mode.

Usage Guide N/A

Configuration Examples The following example enables the ICMP anti-attack function globally.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard enable
```

Related Commands

Command	Description
nffp icmp-guard enable	Enables the ICMP anti-attack function on the interface.
show nfpp icmp-guard summary	Displays the configuration.

Platform Description N/A

11.37 icmp-guard isolate-period

Use this command to set the isolate time globally. Use the **no** or **default** form of this command to restore the default setting.

icmp-guard isolate-period { *seconds* | **permanent** }

no icmp-guard isolate-period

default icmp-guard isolate-period

Parameter Description

Parameter	Description
seconds	Sets the isolate time.The value is in the range is 0 or from 30 to 86400 in the unit of seconds.
permanent	Permanent isolation.

Defaults The default isolate time is 0, which means no isolation.

Command Mode NFPP configuration mode

Usage Guide The isolate period can be configured globally or based on the interface. For one interface, if the

isolate period is not set based on the interface, the global value shall be adopted; or the interface-based isolate period shall be adopted.

Configuration Examples The following example sets the isolate time globally to 180 seconds.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard isolate-period 180
```

Related Commands

Command	Description
nfpp icmp-guard isolate-period	Sets the isolate time on the interface.
show nfpp icmp-guard summary	Displays the configuration.

Platform Description N/A

11.38 icmp-guard monitored-host-limit

Use this command to set the maxmum monitored host number. Use the **no** or **default** form of this command to restore the default setting.

icmp-guard monitored-host-limit *number*

no icmp-guard monitored-host-limit

default icmp-guard monitored-host-limit

Parameter Description

Parameter	Description
number	The maximum monitored host number, in the range from 1 to 4294967295.

Defaults The default is 20000.

Command Mode NFPP configuration mode

Usage Guide If the monitored host number has reached the default 20000, the administrator shall set the max-number smaller than 20000 and it will prompt the message that %ERROR: The value that you configured is smaller than current monitored hosts 20000, please clear a part of monitored hosts. to remind the administrator of the invalid configuration and removing the monitored hosts.
When the maximum monitored host number has been exceeded, it prompts the message that % NFPP_ARP_GUARD-4-SESSION_LIMIT: Attempt to exceed limit of 20000 monitored hosts to remind the administrator.

Configuration Examples The following example sets the maxmum monitored host number to 200.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard monitored-host-limit 200
```

Related Commands	Command	Description
	show nfpp icmp-guard summary	Displays the configuration.

Platform Description N/A

11.39 icmp-guard monitor-period

Use this command to configure the monitor time. Use the **no** or **default** form of this command to restore the default setting.

icmp-guard monitor-period *seconds*

no icmp-guard monitor-period

default icmp-guard monitor-period

Parameter Description	Parameter	Description
	seconds	Sets the monitor time, in the range from180 to 86400 seconds.

Defaults The default is 600.

Command Mode NFPP configuration mode.

Usage Guide When the attacker is detected, if the isolate period is 0, the attacker will be monitored by the software and the timeout time will be the monitor period. During the software monitoring, if the isolate period is not 0, the software-monitored attacker will be auto-isolated by the hardware and the timeout time will be the isolate period. The monitor period is valid with the isolate period 0.

If the isolate period has changed to be 0, the attackers on the interface will be removed rather than being monitored by the software.

Configuration Examples The following example sets the monitor time to 180 seconds.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard monitor-period 180
```

Related Commands	Command	Description
	show nfpp icmp-guard summary	Displays the configuration.
	show nfpp icmp-guard hosts	Displays the monitored host list.
	clear nfpp icmp-guard hosts	Clears the isolated host.

Platform Description N/A

11.40 icmp-guard rate-limit

Use this command to set the rate-limit threshold globally. Use the **no** or **default** form of this command to restore the default setting.

icmp-guard rate-limit { **per-src-ip** | **per-port** } *pps*

no icmp-guard rate-limit { **per-src-ip | per-port** }

default icmp-guard rate-limit { **per-src-ip | per-port** }

Parameter Description

Parameter	Description
per-src-ip	Sets the rate limit for each source IP address.
per-port	Sets the rate limit for each port.
pps	Sets the rate limit, in the range from1 to19999.

Defaults The default settings are as follows:

For the 11.X CM supervisor module, the rate-limit thresholds for each source IP address and each port are 2000 pps and 4000 pps respectively.

For the 11.X CMII supervisor module, the rate-limit thresholds for each IP MAC address and each port are 2500 pps and 4500 pps respectively.

Command Mode NFPP configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the rate-limit threshold globally.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard rate-limit per-src-ip 500
Ruijie(config-nfpp)# icmp-guard rate-limit per-port 800
```

Related Commands

Command	Description
nfpp icmp-guard policy	Sets the rate limit and the attack threshold.
show nfpp icmp-guard summary	Displays the configuration.

Platform Description N/A

11.41 icmp-guard trusted-host

Use this command to set the trusted hosts free form monitoring. Use the **no** or **default** form of this command to restore the default setting.

icmp-guard trusted-host *ip mask*

no icmp-guard trusted-host { **all** | *ip mask* }
default icmp-guard trusted-host

Parameter Description

Parameter	Description
ip	Sets the IP address.
mask	Sets the IP mask.
all	Deletes the configuration of all trusted hosts.

Defaults No trusted host is configured by default.

Command Mode NFPP configuration mode.

Usage Guide The administrator can use this command to set the trusted host free from monitoring. The ICMP packets are allowed to send to the trusted host CPU without any rate-limit and warning configuration.
Configure the mask to set all hosts in one network segment free from monitoring.
UP to 500 trusted hosts are supported.

Configuration Examples The following example sets the trusted hosts free form monitoring.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard trusted-host 1.1.1.0 255.255.255.0
```

Related Commands

Command	Description
show nfpp icmp-guard trusted-host	Displays the configuration.

Platform Description N/A

11.42 ip-guard attack-threshold

Use this command to set the global attack threshold. When the packet rate exceeds the attack threshold, the attack occurs. Use the **no** or **default** form of this command to restore the default setting.
ip-guard attack-threshold { **per-src-ip** | **per-port** } *pps*
no ip-guard attack-threshold { **per-src-ip** | **per-port** }
default ip-guard attack-threshold { **per-src-ip** | **per-port** }

Parameter Description

Parameter	Description
per-src-ip	Sets the attack threshold for each source IP address.
per-port	Sets the attack threshold for each port.

pps	Sets the attack threshold, in pps. The valid range is 1 to 19999.

Defaults By default, the attack threshold for each source IP address and each port are 200pps and 400pps respectively.

Command Mode NFPP configuration mode.

Usage Guide The attack threshold shall be equal to or larger than the rate-limit threshold.

Configuration Examples The following example sets the global attack threshold.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard attack-threshold per-src-ip 2
Ruijie(config-nfpp)# ip-guard attack-threshold per-port 50
```

Related Commands

Command	Description
nfpp ip-guard policy	Displays the rate-limit threshold and attack threshold.
show nfpp ip-guard summary	Displays the configuration.
show nfpp ip-guard hosts	Displays the monitored host list.
clear nfpp ip-guard hosts	Clears the monitored host.

Platform Description N/A

11.43 ip-guard enable

Use this command to enable the IP anti-scanfunction.Use the **no** or **default** form of this command to restore the default setting.

ip-guard enable

no ip-guard enable

default ip-guard enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode NFPP configuration mode.

Usage Guide N/A

Configuration Examples The following example enables the IP anti-scan function globally.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard enable
```

Related Commands

Command	Description
nffp ip-guard enable	Enables the IP anti-scan function on the interface.

Platform Description N/A

11.44 ip-guard isolate-period

Use this command to set the isolate time globally. Use the **no** or **default** form of this command to restore the default setting.

ip-guard isolate-period { *seconds* | **permanent** }

no ip-guard isolate-period

default ip-guard isolate-period

Parameter Description

Parameter	Description
seconds	Sets the isolate time. The value is is 0 or in the range from 30 to 86400 in the unit of seconds.
permanent	Permanent isolation.

Defaults The default isolate time is 0, which means no isolation.

Command Mode NFPP configuration mode.

Usage Guide N/A.

Configuration Examples The following example sets the isolate time globally to 180 seconds.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard isolate-period 180
```

Related Commands

Command	Description
nfpp ip-guard isolate-period	Sets the isolate time on the interface.
show nfpp ip-guard summary	Displays the configuration.

Platform N/A

Description

11.45 ip-guard monitor-period

Use this command to configure the monitor time. Use the **no** or **default** form of this command to restore the default setting.

ip-guard monitor-period *seconds*

no ip-guard monitor-period

default ip-guard monitor-period

Parameter Description

Parameter	Description
seconds	Sets the monitor time, in the range from 180 to 86400 in the unit of seconds.

Defaults The default is 600.

Command Mode NFPP configuration mode.

Usage Guide When the attacker is detected, if the isolate period is 0, the attacker will be monitored by the software and the timeout time will be the monitor period. During the software monitoring, if the isolate period is not 0, the software-monitored attacker will be auto-isolated by the hardware and the timeout time will be the isolate period. The monitor period is valid with the isolate period 0.

If the isolate period has changed to be 0, the attackers on the interface will be removed rather than being monitored by the software

Configuration Examples The following example sets the monitor time to 180 seconds.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard monitor-period 180
```

Related Commands

Command	Description
show nfpp ip-guard summary	Displays the configuration.
show nfpp ip-guard hosts	Displays the monitored host list.
clear nfpp ip-guard hosts	Clears the isolated host.

Platform Description N/A

11.46 ip-guard monitored-host-limit

Use this command to set the maxmum monitored host number. Use the **no** or **default** form of this

command to restore the default setting.

ip-guard monitored-host-limit *number*

no ip-guard monitored-host-limit

default ip-guard monitored-host-limit

Parameter Description

Parameter	Description
number	The maximum monitored host number, in the range from 1 to 4294967295.

Defaults The default is 20000.

Command Mode NFPP configuration mode

Usage Guide If the monitored host number has reached the default 20000, the administrator shall set the max-number smaller than 20000 and it will prompt the message that %ERROR: The value that you configured is smaller than current monitored hosts 20000, please clear a part of monitored hosts. to remind the administrator of the invalid configuration and removing the monitored hosts.
When the maximum monitored host number has been exceeded, it prompts the message that % NFPP_ARP_GUARD-4-SESSION_LIMIT: Attempt to exceed limit of 20000 monitored hosts.to remind the administrator.

Configuration Examples The following example sets the maxmum monitored host number to 200.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard monitored-host-limit 200
```

Related Commands

Command	Description
show nfpp ip-guard summary	Displays the configuration.

Platform Description N/A

11.47 ip-guard rate-limit

Use this command to set the rate-limit threshold globally. Use the **no** or **default** form of this command to restore the default setting.

ip-guard rate-limit { **per-src-ip** | **per-port** } *pps*

no ip-guard rate-limit { **per-src-ip | per-port** }

default ip-guard rate-limit {**per-src-ip | per-port** }

Parameter Description

Parameter	Description

per-src-ip	● Sets the rate limit for each source IP address.
per-port	● Sets the rate limit for each port.
pps	● Sets the rate limit, in the range of 1 to 19999

Defaults By default, the the rate-limit threshold for each source IP address and each port is 20pps and 100pps respectively.

Command Mode NFPP configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the rate-limit threshold globally.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard rate-limit per-src-ip 2
Ruijie(config-nfpp)# ip-guard rate-limit per-port 50
```

Related Commands

Command	Description
nfpp ip-guard policy	Sets the rate limit and the attack threshold.
show nfpp ip-guard summary	Displays the configuration.

Platform Description N/A

11.48 ip-guard scan-threshold

Use this command to set the global scan threshold. Use the **no** or **default** form of this command to restore the default setting.

ip-guard scan-threshold *pkt-cnt*

no ip-guard scan-threshold

default ip-guard scan-threshold

Parameter Description

Parameter	Description
pkt-cnt	Sets the scan threshold, in the range from 1 to 19999.

Defaults The default scan threshold is 100, in 10 seconds.

Command Mode NFPP configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the global scan threshold to 20pps.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard scan-threshold 20
```

Related Commands

Command	Description
nfpp ip-guard scan-threshold	Sets the scan threshold on the port.
show nfpp ip-guard summary	Displays the configuration.

Platform Description N/A

11.49 ip-guard trusted-host

Use this command to set the trusted hosts free form monitoring. Use the **no** or **default** form of this command to restore the default setting.

ip-guard trusted-host *ip mask*

no ip-guard trusted-host { **all** | *ip mask* }

default ip-guard trusted-host

Parameter Description

Parameter	Description
ip	Sets the IP address.
mask	Sets the IP mask.
all	Deletes the configuration of all trusted hosts.

Defaults N/A.

Command Mode NFPP configuration mode.

Usage Guide The administrator can use this command to set the trusted host free from monitoring. The ICMP packets are allowed to sent to the trusted host CPU without any rate-limit and warning configuration. Configure the mask to set all hosts in one network segment free from monitoring.
UP to 500 trusted hosts are supported.

Configuration Examples The following example sets the trusted hosts free form monitoring.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard trusted-host 1.1.1.0 255.255.255.0
```

Related Commands

Command	Description

show nfpp ip-guard trusted-host	Displays the configuration.

Platform Description N/A

11.50 log-buffer enable

Use this command to display logs on the screen. Use the **no** form of this command to store logs in the cache, instead of being displayed on the screen, Use the **no** or the **default** form of this command to restore the default setting.

log-buffer enable

no log-buffer enable

default log-buffer enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults Logs are stored in the cache by default.

Command Mode NFPP configuration mode.

Usage Guide N/A

Configuration Examples The following example displays logs on the screen.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# log-buffer enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

11.51 log-buffer entries

Use this command to set the NFPP log buffer area size. Use the **no** or **default** form of this command to restore the default setting.

log-buffer entries *number*

no log-buffer entries

default log-buffer entries

Parameter Description

Parameter	Description
number	The buffer area size, in the range from 0 to 1024.

Defaults The default is 256.

Command Mode NFPP configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the NFPP log buffer area size.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# log-buffer entries 50
```

Related Commands

Command	Description
log-buffer logs *number_of_message* **interval** *length_in_seconds*	Displays the rate of the syslog generated from the NFPP buffer area.
show nfpp log	Displays the NFPP log configuration or the log buffer area.

Platform Description N/A

11.52 log-buffer logs

Use this command to set the rate of syslog generated from the NFPP log buffer area. Use the **no** or **default** form of this command to restore the default setting.

log-buffer logs *number_of_message* **interval** *length_in_seconds*

no log-buffer logs

default log-buffer logs

Parameter Description

Parameter	Description
number_of_message	The valid range is from 0 to1024. 0 indicates that all logs are recorded in the specific buffer area and no syslogs are generated.
length_in_seconds	The valid range is from 0 to 86400(one day). 0 indicates not to write the log to the buffer area but generate the syslog immediately. With both the *number_of_message* and *length_in_seconds* values are 0, it indicates not to write the log to the buffer area but generate

	the syslog immediately. The parameter *number_of_message /length_in_second* indicates the rate of syslog generated from the NFPP log buffer area.

Defaults By default, *number_of_message* is 0 and *length_in_seconds* is 0.

Command Mode NFPP configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the rate of syslog generated from the NFPP log buffer area.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# log-buffer logs 2 interval 12
```

Related Commands

Command	Description
log-buffer entries *number*	Sets the NFPP log buffer area size.
show nfpp log summary	Displays the NFPP log configuration or the log buffer area.

Platform Description N/A

11.53 logging

Use this command to set the VLAN or the interface log for NFPP. Use the **no** or **default** form of this command to restore the default setting.

logging vlan *vlan-range*

logging interface *interface-id*

no logging vlan *vlan-range*

no logging interface *interface-id*

default logging

Parameter Description

Parameter	Description
vlan-range	Sets the specified VLAN range, in the format such as “1-3, 5”.
interface-id	Sets the interface ID.

Defaults All logs are recorded by default.

Command Mode NFPP configuration mode.

Usage Guide Use this command to filter the logs and records the logs within the specified VLAN range or the specified port

Configuration Examples The following example records the logs in VLAN 1,VLAN 2,VLAN 3 and VLAN 5 only.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# logging vlan 1-3,5
```

The following example records the logs on the interface GigabitEthernet 0/1 only.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# logging interface G 0/1
```

Related Commands

Command	Description
show nfpp log summary	Displays the NFPP log configuration or the log buffer area.

Platform Description N/A

11.54 match

Use this command to specify the message matching filed for the user-defined anti-attack.

match [**etype** *type*] [**src-mac** *smac* [**src-mac-mask** *smac_mask*]] [**dst-mac** *dmac* [**dst-mac-mask** *dst_mask*]] [**protocol** *protocol*] [**src-ip** *sip* [**src-ip-mask** *sip-mask*]] [**src-ipv6** *sipv6* [**src-ipv6-masklen** *sipv6-masklen*]] [**dst-ip** *dip* [**dst-ip-mask** *dip-mask*]] [**dst-ipv6** *dipv6* [**dst-ipv6-masklen** *dipv6-masklen*]] [**src-port** *sport*] [**dst-port** *dport*]

Parameter Description

Parameter	Description
type	Ethernet link layer packet type
smac	Source MAC address
smac_mask	Source MAC address mask
dmac	Destination MAC address
dmac_mask	Destination MAC address mask
protocol	IPv4/v6 message protocol
sip	Source IPv4 address
sip_mask	Source IPv4 address mask
sipv6	Source IPv6 address
sipv6_masklen	Source IPv6 address mask
dip	Destination IPv4 address
dip_mask	Destination IPv4 address mask
dipv6	Destination IPv6 address
dipv6_masklen	Length of the destination IPv6 address mask.
sport	Source port

dport	Destination port

Defaults N/A

Command Mode NFPP configuration mode.

Usage Guide Use this command to create a new user-defined anti-attack type and specify the message fileds to be matched.

Configuration Examples The following example specifies the message matching filed for the user-defined anti-attack.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# nfpp define tcp
Ruijie(config-nfpp-define)#match etype 0x0800 protocol 0x06
```

Related Commands

Command	Description
show nfpp define summary	Displays the user-defined anti-attack configuration

Platform Description N/A

11.55 monitored-host-limit

Use this command to set the maxmum monitored host number. Use the **no** or **default** form of this command to restore the default setting.

monitored-host-limit *number*

no monitored-host-limit

default monitored-host-limit

Parameter Description

Parameter	Description
number	The maximum monitored host number, in the range from 1 to 4294967295.

Defaults The default is 20000.

Command Mode NFPP define configuration mode

Usage Guide If the monitored host number has reached the default 20000, the administrator shall set the max-number smaller than 20000 and it will prompt the message that %ERROR: The value that you configured is smaller than current monitored hosts 20000, please clear a part of monitored hosts. to

remind the administrator of the invalid configuration and removing the monitored hosts.
When the maximum monitored host number has been exceeded, it prompts the message that % % NFPP_DEFINE-4-SESSION_LIMIT: Attempt to exceed limit of name's 20000 monitored hosts. to remind the administrator

Configuration Examples The following example sets the maxmum monitored host number.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# nfpp define tcp
Ruijie(config-nfpp-define)#monitored-host-limit 500
```

Related Commands

Command	Description
show nfpp define summary	Displays the user-defined anti-attack configuration

Platform Description N/A

11.56 monitor period

Use this command to set the monitoring time. Use the **no** or **default** form of this command to restore the default setting.
monitor-period *seconds*
no monitor-period
default monitor-period

Parameter Description

Parameter	Description
seconds	Sets the monitor time, in the range from180 to 86400 in the unit of seconds.

Defaults The default is 600.

Command Mode NFPP define configuration mode.

Usage Guide When the attacker is detected, if the isolate period is 0, the attacker will be monitored by the software and the timeout time will be the monitor period. During the software monitoring, if the isolate period is not 0, the software-monitored attacker will be auto-isolated by the hardware and the timeout time will be the isolate period. The monitor period is valid with the isolate period 0.
If the isolate period has changed to be 0, the attackers on the interface will be removed rather than being monitored by the software.

Configuration The following example sets the monitoring time to 1000 seconds.

Examples

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# define tcp
Ruijie(config-nfpp-define)#monitor-period 1000
```

Related Commands

Command	Description
show nfpp define summary	Displays the user-defined anti-attack configuration.

Platform Description N/A

11.57 nd-guard attack-threshold

Use this command to set the global attack threshold. When the packet rate exceeds the attack threshold, the attack occurs. Use the **no** or **default** form of this command to restore the default setting.

nd-guard attack-threshold per-port { **ns-na** | **rs** | **ra-redirect** } *pps*

no nd-guard attack-threshold per-port { **ns-na** | **rs** | **ra-redirect** }

default nd-guard attack-threshold per-port { **ns-na** | **rs** | **ra-redirect** }

Parameter Description

Parameter	Description
ns-na	Sets the neighbor request and neighbor advertisement.
rs	Sets the router request.
ra-redirect	Sets the router advertisement and the redirect packets.
pps	Sets the attack threshold, in the range from1 to 19999 in the unit of seconds.

Defaults By default, the default attack threshold for the ns-na, rs and ra-redirect on each port is 5000, 1000 and 1000 respectively.

Command Mode NFPP configuration mode.

Usage Guide The attack threshold shall be equal to or larger than the rate-limit threshold.

Configuration Examples The following example sets the global attack threshold.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# nd-guard attack-threshold per-port ns-na 20
Ruijie(config-nfpp)# nd-guard attack-threshold per-port rs 10
Ruijie(config-nfpp)# nd-guard attack-threshold per-port ra-redirect 10
```

Related

Command	Description

Commands

nfpp ip-guard policy	Displays the rate-limit threshold and attack threshold.
show nfpp ip-guard summary	Displays the configuration.

Platform Description N/A

11.58 nd-guard enable

Use this command to enable the ND anti-attack function. Use the **no** or **default** form of this command to restore the default setting.

nd-guard enable

no nd-guard enable

default nd-guard enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode NFPP configuration mode.

Usage Guide N/A

Configuration Examples The following example enables the ND anti-attack function.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# nd-guard enable
```

Related Commands

Command	Description
nffp nd-guard enable	Enables the ND anti-attack function on the interface.
show nfpp nd-guard summary	Displays the configuration.

Platform Description N/A

11.59 nd-guard rate-limit

Use this command to set the rate-limit threshold globally. Use the **no** or **default** form of this command

to restore the default setting.

nd-guard rate-limit per-port { **ns-na** | **rs** | **ra-redirect** } *pps*

no nd-guard rate-limit per-port { **ns-na** | **rs** | **ra-redirect** }

default nd-guard rate-limit per-port { **ns-na** | **rs** | **ra-redirect** }

Parameter Description

Parameter	Description
ns-na	Sets the neighbor request and neighbor advertisement.
rs	Sets the router request.
ra-redirect	Sets the router advertisement and the redirect packets.
pps	Sets the attack threshold, in the range is from 1 to 19999 in the unit of pps.

Defaults By default, the default rate-limit thresholds for the ns-na, rs and ra-redirect on each port are 2000, 500 and 500 respectively.

Command Mode NFPP configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the rate-limit threshold globally.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# nd-guard rate-limit per-port ns-na 10
Ruijie(config-nfpp)# nd-guard rate-limit per-port rs 5
Ruijie(config-nfpp)# nd-guard rate-limit per-port ra-redirect 5
```

Related Commands

Command	Description
nfpp nd-guard policy	Sets the rate limit and the attack threshold.
show nfpp nd-guard summary	Displays the configuration.

Platform Description N/A

11.60 nd-guard ratelimit-forwarding enable

Use this command to enable the ND-guard ratelimit-forwarding on the interface.

nd-guard ratelimit-forwarding enable

Use this command to disable the ND-guard ratelimit-forwarding on the interface.

no nd-guard ratelimit-forwarding enable

Use this command to restore the default setting.

default nd-guard ratelimit-forwarding enable

Parameter Description	Parameter	Description
	N/A	N/A

Defaults The function is enabled by default.

Command Mode NFPP configuration mode.

Usage Guide N/A

Configuration Examples The following example enables the ND-guard ratelimit-forwarding on the interface.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# nd-guard ratelimit-forwarding enable
```

Platform Description N/A

11.61 nfpp

Use this command to enter NFPP configuration mode.

nfpp

Parameter Description	Parameter	Description
	N/A	N/A

Defaults N/A

Command Mode Global configuration mode

Usage Guide Use this command to enter NFPP configuration mode and make further configuration.

Configuration Examples

```
Ruijie(config)# nfpp
```

Platform Description N/A

11.62 nfpp arp-guard enable

Use this command to enable the anti-ARP attack function on the interface. Use the **no** or **default** form of this command to restore the default setting.

nfpp arp-guard enable

no nfpp arp-guard enable

default nfpp arp-guard enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults The anti-ARP attack function is not enabled on the interface.

Command Mode Interface configuration mode.

Usage Guide The interface anti-ARP attack configuration is prior to the global configuration.

Configuration Examples The following example enables the anti-ARP attack function on the interface.

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp arp-guard enable
```

Related Commands

Command	Description
arp-guard enable	Enables the anti-ARP attack function.
show nfpp arp-guard summary	Displays the configuration.

Platform Description N/A

11.63 nfpp arp-guard isolate-period

Use this command to set the isolate period in the interface configuration mode. Use the **no** or **default** form of this command to restore the default setting.

nfpp arp-guard isolate-period { **seconds** | **permanent** }

no nfpp arp-guard isolate-period

default nfpp arp-guard isolate-period

Parameter Description

Parameter	Description
seconds	Sets the isolate period. The value is 0, or in the range from 30 to 86400 in the unit of seconds.

permanent	Permanent isolation.

Defaults By default, the isolate period is not configured.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the isolate period in the interface configuration mode.

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp arp-guard isolate-period 180
```

Related Commands

Command	Description
arp-guard isolate-period	Sets the global isolate period.
show nfpp arp-guard summary	Displays the configuration.

Platform Description N/A

11.64 nfpp arp-guard policy

Use this command to set the rate-limit threshold and the attack threshold. Use the **no** or **default** form of this command to restore the default setting.

nfpp arp-guard policy { **per-src-ip** | **per-src-mac** | **per-port** } *rate-limit-pps attack-threshold-pps*

no nfpp arp-guard policy { **per-src-ip** | **per-src-mac** | **per-port** }

default nfpp arp-guard policy { **per-src-ip** | **per-src-mac** | **per-port** }

Parameter Description

Parameter	Description
per-src-ip	Sets the rate-limit threshold and the attack threshold for each source IP address.
per-src-mac	Sets the rate-limit threshold and the attack threshold for each source MAC address.
per-port	Sets the rate-limit threshold and the attack threshold for each port.
rate-limit-pps	Sets the rate-limit threshold, in the range from 1 to 19999.
attack-threshold-pps	Sets the attack threshold, in the range from1 to 19999.

Defaults By default, the rate-limit threshold and the attack threshold are not configured.

Command Mode Interface configuration mode.

Usage Guide The attack threshold value shall be equal to or greater than the rate-limit threshold.

Configuration Examples The following example sets the rate-limit threshold and the attack threshold.

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp arp-guard policy per-src-ip 2 10
Ruijie(config-if)# nfpp arp-guard policy per-src-mac 3 10
Ruijie(config-if)# nfpp arp-guard policy per-port 50 100
```

Related Commands

Command	Description
arp-guard attack-threshold	Sets the global attack threshold.
arp-guard rate-limit	Sets the global rate-limit threshold.
show nfpp arp-guard summary	Displays the configuration.
show nfpp arp-guard hosts	Displays the monitored host.
clear nfpp arp-guard hosts	Clears the isolated host.

Platform Description N/A

11.65 nfpp arp-guard scan-threshold

Use this command to set the scan threshold. Use the **no** or **default** form of this command to restore the default setting.

nfpp arp-guard scan-threshold *pkt-cnt*

no nfpp arp-guard scan-threshold

default nfpp arp-guard scan-threshold

Parameter Description

Parameter	Description
pkt-cnt	Sets the scan threshold, in the range from1 to 19999.

Defaults By default, the sport-based scan threshold is not configured.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the scan threshold to 20pps.

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp arp-guard scan-threshold 20
```

Related Commands

Command	Description
arp-guard attack-threshold	Sets the global attack threshold.
show nfpp arp-guard summary	Displays the configuration.
show nfpp arp-guard scan	Displays the ARP scan table.
clear nfpp arp-guard scan	Clears the ARP scan table.

Platform Description N/A

11.66 nfpp define enable

Use this command to enable the user-defined anti-attack function on the interface. Use the **no** or **default** form of this command to restore the default setting.

nfpp define *name* **enable**

no nfpp define *name* **enable**

default nfpp define *name* **enable**

Parameter Description

Parameter	Description
name	Name of the user-defined anti-attack type

Defaults N/A

Command Mode Interface configuration mode.

Usage Guide This command takes effect only after the name of the user-defined anti-attack and the match, rate-count, rate-limit and the attack-threshold have been configured.

Configuration Examples The following example enables the user-defined anti-attack function on the interface.

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp define tcp enable
```

Related Commands

Command	Description
show nfpp define summary	Displays the user-defined anti-attack configuration

Platform Description N/A

11.67 nfpp define policy

Use this command to set the local rate-limit threshold and the attack threshold. Use the **no** or **default** form of this command to restore the default setting.

nfpp define *name* **policy** { **per-src-ip** | **per-src-mac** | **per-port** } *rate-limit-pps attack-threshold-pps*

no nfpp define *name* **policy** {**per-src-ip | per-src-mac** | **per-port**}

default nfpp define *name* **policy** { **per-src-ip** | **per-src-mac** | **per-port** }

Parameter Description

Parameter	Description
per-src-ip	Sets the attack threshold for each source IP address.
per-src-mac	Sets the attack threshold for each source MAC address.
per-port	Sets the attack threshold for each port.
rate-limit-pps	Sets the rate-limit threshold, in the range from 1 to 19999.
attack-threshold-pps	Sets the attack threshold, in the range of from1 to 19999.

Defaults By default, the rate-limit threshold and the attack threshold are not configured.

Command Mode Interface configuration mode.

Usage Guide The attack threshold value shall be equal to or greater than the rate-limit threshold.

Configuration Examples The following example sets the local rate-limit threshold and the attack threshold.

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp define tcp policy per-src-ip 2 10
Ruijie(config-if)# nfpp define tcp policy per-port 50 100
```

Related Commands

Command	Description
define-policy	Sets the global rate-limit threshold and attack threshold.
show nfpp define summary	Displays the user-defined anti-attack configuration.

Platform Description N/A

11.68 nfpp dhcp-guard enable

Use this command to enable the DHCP anti-attack function on the interface. Use the **no** or **default** form of this command to restore the default setting.

nfpp dhcp-guard enable

no nfpp dhcp-guard enable

default nfpp dhcp-guard enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults The DHCP anti-attack function is not enabled on the interface.

Command Mode Interface configuration mode.

Usage Guide The interface DHCP anti- attack configuration is prior to the global configuratio

Configuration Examples The following example enables the DHCP anti-attack function on the interface.

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp dhcp-guard enable
```

Related Commands

Command	Description
dhcp-guard enable	Enables the anti-ARP attack function.
show nfpp dhcp-guard summary	Displays the configuration.

Platform Description N/A

11.69 nfpp dhcp-guard isolate-period

Use this command to set the isolate period in the interface configuration mode. Use the **no** or **default** form of this command to restore the default setting.

nfpp dhcp-guard isolate-period { *seconds* | **permanent** }

no nfpp dhcp-guard isolate-period

default nfpp dhcp-guard isolate-period

Parameter Description

Parameter	Description
seconds	Sets the isolate period. The value is 0 or in the range from 30 to 86400 in the unit of seconds.
permanent	Permanent isolation.

Defaults By default, the isolate period is not configured

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the isolate period to 180 seconds.

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp dhcp-guard isolate-period 180
```

Related Commands

Command	Description
dhcp-guard isolate-period	Sets the global isolate period.
show nfpp dhcp-guard summary	Displays the configuration.

Platform Description N/A

11.70 nfpp dhcp-guard policy

Use this command to set the rate-limit threshold and the attack threshold on the port. Use the **no** or **default** form of this command to restore the default setting.

nfpp dhcp-guard policy { **per-src-mac** | **per-port** } *rate-limit-pps attack-threshold-pps*

no nfpp dhcp-guard policy { **per-src-mac** | **per-port** }

default nfpp dhcp-guard policy { **per-src-mac** | **per-port** }

Parameter Description

Parameter	Description
per-src-mac	Sets the rate-limit threshold and the attack threshold for the designated source MAC address.
per-port	Sets the rate-limit threshold and the attack threshold for the designated port.
rate-limit-pps	Sets the rate-limit threshold, in the range from1 to 19999.
attack-threshold-pps	Sets the attack threshold, in the range from1 to 19999.

Defaults The rate-limit threshold and the attack threshold are not configured by default. So the device adopts the rate-limit threshold and the attack threshold that are set in the global configuration mode.

Command Mode Interface configuration mode.

Usage Guide The attack threshold value shall be equal to or greater than the rate-limit threshold.

Configuration Examples The following example sets the rate-limit threshold and the attack threshold on interface G0/1.

```
Ruijie(config)#interface G 0/1
Ruijie(config-if)# nfpp dhcpv6-guard policy per-src-mac 3 10
Ruijie(config-if)# nfpp dhcpv6-guard policy per-port 50 100
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

11.71 nfpp dhcpv6-guard enable

Use this command to enable the DHCPv6 anti-attack function on the interface. Use the **no** or **default** form of this command to restore the default setting.

nfpp dhcpv6-guard enable

no nfpp dhcpv6-guard enable

default nfpp dhcpv6-guard enable

Parameter Description	Parameter	Description
	N/A	N/A

Defaults The DHCPv6 anti-attack function is not enabled on the interface.

Command Mode Interface configuration mode.

Usage Guide The interface DHCPv6 anti- attack configuration is prior to the global configuration.

Configuration Examples The following example enables the DHCPv6 anti-attack function on interface G0/1.

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp dhcpv6-guard enable
```

Related Commands	Command	Description
	dhcpv6-guard enable	Enables the anti-ARP attack function.
	show nfpp dhcpv6-guard summary	Displays the configuration.

Platform Description N/A

11.72 nfpp dhcpv6-guard policy

Use this command to set the rate-limit threshold and the attack threshold. Use the **no** or **default** form of this command to restore the default setting.

nfpp dhcpv6-guard policy { **per-src-mac** | **per-port** } *rate-limit-pps attack-threshold-pps*

no nfpp dhcpv6-guard policy { **per-src-mac** | **per-port**}

default nfpp dhcpv6-guard policy { **per-src-mac** | **per-port**}

Parameter Description

Parameter	Description
per-src-mac	Sets the rate-limit threshold and the attack threshold for each source MAC address.
per-port	Sets the rate-limit threshold and the attack threshold for each port.
rate-limit-pps	Sets the rate-limit threshold, in the range of from1 to 19999.
attack-threshold-pps	Sets the attack threshold, in the range from1 to19999.

Defaults By default, the rate-limit threshold and the attack threshold are not configured.

Command Mode Interface configuration mode.

Usage Guide The attack threshold value shall be equal to or greater than the rate-limit threshold.

Configuration Examples The following example sets the rate-limit threshold and the attack threshold.

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp dhcpv6-guard policy per-src-mac 3 10
Ruijie(config-if)# nfpp dhcpv6-guard policy per-port 50 100
```

Related Commands

Command	Description
dhcpv6-guard attack-threshold	Sets the global attack threshold.
dhcpv6-guard rate-limit	Sets the global rate-limit threshold.
show nfpp dhcpv6-guard summary	Displays the configuration.
show nfpp dhcpv6-guard hosts	Displays the monitored host.
clear nfpp dhcpv6-guard hosts	Clears the isolated host.

Platform Description N/A

11.73 nfpp icmp-guard enable

Use this command to enable the ICMP anti-attack function on the interface. Use the **no** or **default** form of this command to restore the default setting.

nfpp icmp-guard enable

no nfpp icmp-guard enable

default nfpp icmp-guard enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults The ICMP anti-attack function is not enabled on the interface.

Command Mode Interface configuration mode.

Usage Guide The interface ICMP anti- attack configuration is prior to the global configuration.

Configuration Examples The following example enables the ICMP anti-attack function on the interface.

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp icmp-guard enable
```

Related Commands

Command	Description
icmp-guard enable	Enables the anti-ARP attack function.
show nfpp icmp-guard summary	Displays the configuration.

Platform Description N/A

11.74 nfpp icmp-guard isolate-period

Use this command to set the isolate period in the interface configuration mode. Use the **no** or **default** form of this command to restore the default setting.

nfpp icmp-guard isolate-period { *seconds* | **permanent** }

no nfpp icmp-guard isolate-period

default nfpp icmp-guard isolate-period

Parameter Description

Parameter	Description
seconds	Sets the isolate period. The value is 0 or in the range from 30 to 86400 in the unit of seconds.
permanent	Permanent isolation.

Defaults By default, the isolate period is not configured.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the isolate period in the interface configuration mode.

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp icmp-guard isolate-period 180
```

Related Commands

Command	Description
icmp-guard isolate-period	Sets the global isolate period.
show nfpp icmp-guard summary	Displays the configuration.

Platform Description N/A

11.75 nfpp icmp-guard policy

Use this command to set the rate-limit threshold and the attack threshold. Use the **no** or **default** form of this command to restore the default setting.

nfpp icmp-guard policy { p**er-src-ip** | **per-port** } *rate-limit-pps attack-threshold-pps*

no nfpp icmp-guard policy { **per-src-ip** | **per-port** }

default nfpp icmp-guard policy { **per-src-ip** | **per-port** }

Parameter Description

Parameter	Description
per-src-ip	Sets the rate-limit threshold and the attack threshold for each source IP address.
per-port	Sets the rate-limit threshold and the attack threshold for each port.
rate-limit-pps	Sets the rate-limit threshold, in the range from1 to 19999.
attack-threshold-pps	Sets the attack threshold, in range from1 to 19999.

Defaults By default, the rate-limit threshold and the attack threshold are not configured.

Command Mode Interface configuration mode.

Usage Guide The attack threshold value shall be equal to or greater than the rate-limit threshold.

Configuration Examples The following example sets the rate-limit threshold and the attack threshold.

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp icmp-guard policy per-src-ip 5 10
Ruijie(config-if)# nfpp icmp-guard policy per-port 100 200
```

Related Commands

Command	Description
icmp-guard attack-threshold	Sets the global attack threshold.

icmp-guard rate-limit	Sets the global rate-limit threshold.
show nfpp icmp-guard summary	Displays the configuration.
show nfpp icmp-guard hosts	Displays the monitored host.
clear nfpp icmp-guard hosts	Clears the isolated host.

Platform Description N/A

11.76 nfpp ip-guard enable

Use this command to enable the ICMP anti-attack function on the interface. Use the **no** or **default** form of this command to restore the default setting.

nfpp ip-guard enable

no nfpp ip-guard enable

default nfpp ip-guard enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults The IP anti-scan function is not enabled on the interface.

Command Mode Interface configuration mode.

Usage Guide The interface IP anti-scan configuration is prior to the global configuration.

Configuration Examples The following example enables the ICMP anti-attack function on the interface.

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp ip-guard enable
```

Related Commands

Command	Description
ip-guard enable	Enables the anti-ARP attack function.
show nfpp ip-guard summary	Displays the configuration.

Platform Description N/A

11.77 nfpp ip-guard isolate-period

Use this command to set the isolate period in the interface configuration mode. Use the **no** or **default** form of this command to restore the default setting.

nfpp ip-guard isolate-period { *seconds* | **permanent** }
no nfpp ip-guard isolate-period
default nfpp ip-guard isolate-period

Parameter Description

Parameter	Description
seconds	Sets the isolate period, in the range from 30 to 86400 in the unit of seconds.
permanent	Permanent isolation.

Defaults By default, the isolate period is not configured.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the isolate period in the interface configuration mode.

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp ip-guard isolate-period 180
```

Related Commands

Command	Description
ip-guard isolate-period	Sets the global isolate period.
show nfpp ip-guard summary	Displays the configuration.

Platform Description N/A

11.78 nfpp ip-guard policy

Use this command to set the rate-limit threshold and the attack threshold. Use the **no** or **default** form of this command to restore the default setting.
nfpp ip-guard policy { **per-src-ip** | **per-port** } *rate-limit-pps attack-threshold-pps*
no nfpp ip-guard policy { **per-src-ip** | **per-port** }
default nfpp ip-guard policy { **per-src-ip** | **per-port** }

Parameter Description

Parameter	Description
per-src-ip	Sets the rate-limit threshold and the attack threshold for each source IP address.
per-port	Sets the rate-limit threshold and the attack threshold for each port.
rate-limit-pps	Sets the rate-limit threshold, in the range from 1 to 19999.

attack-threshold-pps	Sets the attack threshold, in the range from 1 to 19999.

Defaults By default, the rate-limit threshold and the attack threshold are not configured.

Command Mode Interface configuration mode.

Usage Guide The attack threshold value shall be equal to or greater than the rate-limit threshold.

Configuration Examples The following example sets the rate-limit threshold and the attack threshold.

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp ip-guard policy per-src-ip 2 10
Ruijie(config-if)# nfpp ip-guard policy per-port 50 100
```

Related Commands

Command	Description
ip-guard attack-threshold	Sets the global attack threshold.
ip-guard rate-limit	Sets the global rate-limit threshold.
show nfpp ip-guard summary	Displays the configuration.
show nfpp ip-guard hosts	Displays the monitored host.
clear nfpp ip-guard hosts	Clears the isolated host.

Platform Description N/A

11.79 nfpp ip-guard scan-threshold

Use this command to set the scan threshold. Use the **no** or **default** form of this command to restore the default setting.

nfpp ip-guard scan-threshold *pkt-cnt*

no nfpp ip-guard scan-threshold

default nfpp ip-guard scan-threshold

Parameter Description

Parameter	Description
pkt-cnt	Sets the scan threshold, in the range from 1 to 19999.

Defaults By default, the sport-based scan threshold is not configured.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the scan threshold to 20pps.

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp ip-guard scan-threshold 20
```

Related Commands

Command	Description
ip-guard attack-threshold	Sets the global attack threshold.
show nfpp ip-guard summary	Displays the configuration.

Platform Description N/A

11.80 nfpp nd-guard enable

Use this command to enable the ND anti-attack function on the interface. Use the **no** or **default** form of this command to restore the default setting.

nfpp nd-guard enable

no nfpp nd-guard enable

default nfpp nd-guard enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults The ND anti-attack function is not enabled on the interface.

Command Mode Interface configuration mode.

Usage Guide The interface ND anti-attack configuration is prior to the global configuration.

Configuration Examples The following example enables the ND anti-attack function on the interface.

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp nd-guard enable
```

Related Commands

Command	Description
nd-guard enable	Enables the ND anti- attack function.
show nfpp nd-guard summary	Displays the configuration.

Platform Description N/A

11.81 nfpp nd-guard policy

Use this command to set the rate-limit threshold and the attack threshold. Use the **no** or **default** form of this command to restore the default setting.

nfpp nd-guard policy per-port { **ns-na** | **rs** | **ra-redirect** } *rate-limit-pps attack-threshold-pps*

no nfpp nd-guard policy per-port { **ns-na** | **rs** | **ra-redirect** }

default nfpp nd-guard policy per-port { **ns-na** | **rs** | **ra-redirect** }

Parameter Description

Parameter	Description
ns-na	Sets the neighbor request and neighbor advertisement.
rs	Sets the router request.
ra-redirect	Sets the router advertisement and the redirect packets.
rate-limit-pps	Sets the rate-limit threshold, in the range from 1 to 19999.

Defaults By default, the rate-limit threshold and the attack threshold are not configured.

Command Mode Interface configuration mode.

Usage Guide The attack threshold value shall be equal to or greater than the rate-limit threshold.

Configuration Examples The following example sets the rate-limit threshold and the attack threshold.

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp nd-guard policy per-port ns-na 50 100
Ruijie(config-if)# nfpp nd-guard policy per-port rs 10 20
Ruijie(config-if)# nfpp nd-guard policy per-port ra-redirect 10 20
```

Related Commands

Command	Description
nd-guard attack-threshold	Sets the global attack threshold.
nd-guard rate-limit	Sets the global rate-limit threshold.
show nfpp nd-guard summary	Displays the configuration.

Platform Description N/A

11.82 show nfpp arp-guard hosts

Use this command to display the monitored host.

show nfpp arp-guard hosts [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*] [*ip-address* | *mac-address*]]]

Parameter Description

Parameter	Description
statistics	Displays the statistical information of the monitored host.
vid	The VLAN ID
interface-id	The interface name
ip-address	The IP address
mac-address	The MAC address

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the statistical information of the monitored host.

```
Ruijie# show nfpp arp-guard hosts statistics
success    fail    total
-------    ----    -----
100        20       120

The following example shows the monitored host:
Ruijie# show nfpp arp-guard hosts
If column 1 shows '*', it means "hardware do not isolate user" .
VLAN  interface IP address   MAC address   remain-time(s)
----  --------   ---------   -----------   -------------
1     Gi0/1      1.1.1.1     -               110
2     Gi0/2      1.1.2.1     -               61
*3    Gi0/3      -           0000.0000.1111  110
4     Gi0/4      -           0000.0000.2222   61
Total:4 hosts
```

Related Commands

Command	Description
clear nfpp arp-guard hosts	Clears the monitored host.

Platform Description N/A

11.83 show nfpp arp-guard scan

Use this command to display the ARP scan list.

show nfpp arp-guard scan [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*] [*ip-address*]

[*mac-address*]]]

Parameter Description

Parameter	Description
statistics	Displays the statistical information of the ARP scan list.
vid	The VLAN ID.
interface-id	The interface name.
ip-address	The IP address.
mac-address	The MAC address.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the ARP scan list.

```
Ruijie# show nfpp arp-guard scan statistics
arp-guard table has 4 record(s).

Ruijie# show nfpp arp-guard scan
VLAN    interface   IP address   MAC address    timestamp
----    --------   ----------  -----------     ---------
1       Gi0/1      -         0000.0000.0001   2008-01-23 16:23:10
2       Gi0/2      1.1.1.1     0000.0000.0002   2008-01-23 16:24:10
3       Gi0/3      -          0000.0000.0003   2008-01-23 16:25:10
4       Gi0/4      -          0000.0000.0004   2008-01-23 16:26:10
Total:4 record(s)

Ruijie# show nfpp arp-guard scan vlan 1 interface G 0/1 0000.0000.0001
VLAN    interface   IP address   MAC address    timestamp
----    --------    ----------    -----------    -------
1       Gi0/1      -           0000.0000.0001   2008-01-23 16:23:10
Total:1 record(s)
```

Related Commands

Command	Description
arp-guard scan-threshold	Sets the global scan threshold.
nfpp arp-guard scan-threshold	Sets the scan threshold.
clear nfpp arp-guard scan	Clears the ARP scan list.

Platform Description N/A

11.84 show nfpp arp-guard summary

Use this command to display the configuration.

show nfpp arp-guard summary

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the configuration.

```
Ruijie# show nfpp arp-guard summary
(Format of column Rate-limit and  Attack-threshold is
per-src-ip/per-src-mac/per-port.)
Interface  Status  Isolate-period Rate-limit Attack-threshold Scan-threshold
Global     Enable  300            4/5/60    8/10/100         15
Gi 0/1      Enable  180            5/-/-      8/-/-             -
Gi 0/2      Disable 200            4/5/60    8/10/100          20

Maximum count of monitored hosts: 1000
Monitor period:300s
```

Field Description:

Field	Description
Interface(Global)	Global configuration
Status	Enables/Disables the anti-attack function.
Rate-limit	In the format of the rate-limit threshold for the source IP address/ the rate-limit threshold for the source MAC address/ the rate-limit threshold for the port
Attack-threshold	In the same format as the rate-limit.
-	No configuration.

Related Commands

Command	Description
arp-guard attack-threshold	Sets the global attack threshold.
arp-guard enable	Enables the anti-ARP attack function.
arp-guard isolate-period	Sets the global isolate time.
arp-guard monitor-period	Sets the monitor period.

arp-guard monitored-host-limit	Sets the maximum number of the monitored hosts.
arp-guard rate-limit	Sets the global rate-limit threshold.
arp-guard scan-threshold	Sets the global scan threshold.
nfpp arp-guard enable	Enables the anti-ARP attack function on the interface.
nfpp arp-guard isolate-period	Sets the isolate time.
nfpp arp-guard policy	Sets the rate-limit threshold and attack threshold.
nfpp arp-guard scan-threshold	Sets the scan threshold.

Platform Description N/A

11.85 show nfpp define hosts

Use this command to display the monitored hosts.

show nfpp define hosts *name* [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*] [*ip-address*]]]

Parameter Description

Parameter	Description
name	Name of the user-defined anti-attack type.
statistics	Displays the statistics of monitored hosts.
vid	Vlan ID.
interface-id	Interface name.
ip-address	IP address.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide This command allows filtering the hosts with parameters specified

Configuration Examples The following example displays the monitored hosts.

```
Ruijie#show nfpp define hosts abc
If col_filter 1 shows '*', it means "hardware do not isolate host".
 VLAN    interface   MAC address    remain-time(s)
 ----    ---------   -----------    --------------
*1      Gi4/2      00d0.f822.33e5  592
Total: 1 host
```

Related

Command	Description

Commands		
	clear nfpp define hosts	Clears the monitored hosts of user-defined anti-attack type.

Platform Description N/A

11.86 show nfpp define summary

Use this command to display the configuration.

show nfpp define summary [*name*]

Parameter Description	Parameter	Description
	name	Name of the user-defined anti-attack type.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide This command can be used to display the configuration. Without the name specified, all user-defined anti-attack types will be displayed.

Configuration Examples The following example displays the configuration.

```
Ruijie#show nfpp define summary abc
Define abc summary:
match etype 0x800 src-ip 1.1.1.1 src-ip-mask 255.255.255.255
Maximum count of monitored hosts: 20000
Monitor period:600s
(Format of column Rate-limit and  Attack-threshold is
per-src-ip/per-src-mac/per-port.)
Interface Status  Rate-limit     Attack-threshold
Global    Disable -/10/-         -/20/-
Gi4/1     Enable  -/-/-          -/-/-
```

Field	Description
Interface	If the interface field is displayed as Global, it means that is configured in the global configuration mode.
Status	Enables/ Disables the anti-attack function.

Related Commands	Command	Description
	match	Clears the monitored hosts of user-defined

	anti-attack type.
policy	Attack threshold and rate-limit threshold.
isolate-period	Isolates time
monitored-period	Monitored time
monitored-host-limit	Maximum monitored host number

Platform Description N/A

11.87 show nfpp define trusted-host

Use this command to display the trusted host free from monitoring.

show nfpp define trusted-host *name*

Parameter Description

Parameter	Description
name	Name of the user-defined anti-attack type.

Defaults N/A.

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the trusted host configuration.

```
Ruijie# show nfpp define trusted-host tcp
Define tcp:
IP address     mask
---------      ------
1.1.1.0        255.255.255.0
1.1.2.0        255.255.255.0
Total:2 record(s)
```

Related Commands

Command	Description
trusted-host	Configures the trusted hosts.

Platform Description N/A

11.88 show nfpp dhcp-guard hosts

Use this command to display the monitored host.

show nfpp dhcp-guard hosts [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*] [*ip-address* | *mac-address*]]]

Parameter Description

Parameter	Description
statistics	Displays the statistical information of the monitored host.
vid	The VLAN ID.
interface-id	The interface name.
ip-address	The IP address.
mac-address	The MAC address.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the statistical information of the monitored host.

```
Ruijie# show nfpp dhcp-guard hosts statistics
success    fail    total
-------    ----    -----
100        20       120

The following example shows the monitored host:
Ruijie# show nfpp dhcp-guard hosts
If column 1 shows '*', it means "hardware failed to isolate host".
VLAN  interface   MAC address    remain-time(seconds)
----    ---------    -----------        -------------------
 1    gi0/2     0000.0000.0001   10
 *2   gi0/1     0000.0000.0002   20
Total:2 host(s)
```

Related Commands

Command	Description
clear nfpp dhcp-guard hosts	Clears the monitored host.

Platform Description N/A

11.89 show nfpp dhcp-guard summary

Use this command to display the configuration.

show nfpp dhcp-guard summary

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the configuration.

```
Ruijie# show nfpp dhcp-guard summary
(Format of column Rate-limit and  Attack-threshold is
per-src-ip/per-src-mac/per-port.)
Interface  Status  Isolate-period Rate-limit Attack-threshold
Global     Enable  300            -/5/150    -/10/300
Gi 0/1      Enable  180            -/6/-      -/8/-
Gi 0/2      Disable 200            -/5/30     -/10/50

Maximum count of monitored hosts: 1000
Monitor period:300s
```

Field Description

Field	Description
Interface(Global)	Global configuration
Status	Enables/Disables the anti-attack function.
Rate-limit	In the format of the rate-limit threshold for the source IP address/ the rate-limit threshold for the source MAC address/ the rate-limit threshold for the port
Attack-threshold	In the same format as the rate-limit.
-	No configuration.

Related Commands

Command	Description
dhcp-guard attack-threshold	Sets the global attack threshold.
dhcp-guard enable	Enables the DHCP anti-attack function.
dhcp-guard isolate-period	Sets the global isolate time.
dhcp-guard monitor-period	Sets the monitor period.

dhcp-guard monitored-host-limit	Sets the maximum number of the monitored hosts.
dhcp-guard rate-limit	Sets the global rate-limit threshold.
nfpp dhcp-guard enable	Enables the DHCP anti-attack function on the interface.
nfpp dhcp-guard isolate-period	Sets the isolate time.
nfpp dhcp-guard policy	Sets the rate-limit threshold and attack threshold.

Platform Description N/A

11.90 show nfpp dhcpv6-guard hosts

Use this command to display the monitored host.

show nfpp dhcpv6-guard hosts [**statistics** | [[*vlan vid*] [**interface** *interface-id*] [*ip-address* | *mac-address*]]]

Parameter Description

Parameter	Description
statistics	Displays the statistical information of the monitored host.
vid	The VLAN ID.
interface-id	The interface name.
ip-address	The IP address.
mac-address	The MAC address.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the statistical information of the monitored host.

```
Ruijie# show nfpp dhcpv6-guard hosts
If column 1 shows '*', it means "hardware failed to isolate host".
VLAN  interface   MAC address    remain-time(seconds)
----    ---------    -----------        -------------------
 *1    gi0/2     0000.0000.0001   10
 *2   gi0/1     0000.0000.0002   20
Total:2 host(s)
```

Related

Command	Description

Commands		
	clear nfpp dhcpv6-guard hosts	Clears the monitored host.

Platform Description N/A

11.91 show nfpp dhcpv6-guard summary

Use this command to display the configuration.

show nfpp dhcpv6-guard summary

Parameter Description	Parameter	Description
	N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the configuration.

```
Ruijie#show nfpp dhcpv6-guard summary

(Format of column Rate-limit and Attack-threshold is
per-src-ip/per-src-mac/per-port.)
Interface Status  Rate-limit     Attack-threshold
Global    Enable  -/5/1200       -/10/1500

Maximum count of monitored hosts: 20000
Monitor period: 600s
```

Field	Description
Interface(Global)	Global configuration
Status	Enables/Disables the anti-attack function.
Rate-limit	In the format of the rate-limit threshold for the source IP address/ the rate-limit threshold for the source MAC address/ the rate-limit threshold for the port
Attack-threshold	In the same format as the rate-limit.
-	No configuration.

Related Commands	Command	Description

dhcpv6-guard attack-threshold	Sets the global attack threshold.
dhcpv6-guard enable	Enables the DHCPv6 anti-attack function.
dhcpv6-guard monitor-period	Sets the monitor period.
dhcpv6-guard monitored-host-limit	Sets the maximum number of the monitored hosts.
dhcpv6-guard rate-limit	Sets the global rate-limit threshold.
nfpp dhcpv6-guard enable	Enables the DHCPv6 anti-attack function on the interface.
nfpp dhcpv6-guard policy	Sets the rate-limit threshold and attack threshold.

Platform Description N/A

11.92 show nfpp icmp-guard hosts

Use this command to display the monitored host.

show nfpp icmp-guard hosts [**statistics** | [[*vlan vid*] [**interfac**e *interface-Id*] [*ip-address* | *mac-address*]]]

Parameter Description

Parameter	Description
statistics	Displays the statistical information of the monitored host.
vid	The VLAN ID.
interface-id	The interface name.
ip-address	The IP address.
mac-address	The MAC address.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the statistical information of the monitored host.

```
Ruijie# show nfpp icmp-guard hosts statistics
success   fail   total
-------   ----   -----
100       20       120
```

The following example displays the monitored host.

```
Ruijie# show nfpp icmp-guard hosts
```

```
If column 1 shows '*', it means "hardware failed to isolate host".
VLAN  interface IP address     remain-time(s)
----   --------   ---------         -------------
1     Gi0/1      1.1.1.1     110
2     Gi0/2      1.1.2.1     61
Total:2 host(s)
```

Related Commands

Command	Description
clear nfpp icmp-guard hosts	Clears the monitored host.

Platform Description N/A

11.93 show nfpp icmp-guard summary

Use this command to display the configuration.

show nfpp icmp-guard summary

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the configuration.

```
Ruijie# show nfpp icmp-guard summary
(Format of column Rate-limit and  Attack-threshold is
per-src-ip/per-src-mac/per-port.)
Interface  Status  Isolate-period Rate-limit Attack-threshold
Global     Enable  300            4/-/60    8/-/100
Gi 0/1      Enable  180            5/-/-      8/-/-
Gi 0/2      Disable 200            4/-/60    8/-/100

Maximum count of monitored hosts: 1000
Monitor period:300s
```

Field	Description
Interface(Global)	Global configuration
Status	Enables/Disables the anti-attack function.

Rate-limit	In the format of the rate-limit threshold for the source IP address/ the rate-limit threshold for the source MAC address/ the rate-limit threshold for the port
Attack-threshold	In the same format as the rate-limit.
-	No configuration.

Related Commands

Command	Description
icmp-guard attack-threshold	Sets the global attack threshold.
icmp-guard enable	Enables the ICMP anti-attack function.
icmp-guard isolate-period	Sets the global isolate time.
icmp-guard monitor-period	Sets the monitor period.
icmp-guard monitored-host-limit	Sets the maximum number of the monitored hosts.
icmp-guard rate-limit	Sets the global rate-limit threshold.
nfpp icmp-guard enable	Enables the ICMP anti-attack function on the interface.
nfpp icmp-guard isolate-period	Sets the isolate time.
nfpp icmp-guard policy	Sets the rate-limit threshold and attack threshold.

Platform Description N/A

11.94 show nfpp icmp-guard trusted-host

Use this command to display the trusted host free from being monitored.

show nfpp icmp-guard summary

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the trusted host free from being monitored.

```
Ruijie# show nfpp icmp-guard trusted-host
IP address     mask
```

```
---------      ------
1.1.1.0        255.255.255.0
1.1.2.0        255.255.255.0
Total:2 record(s)
```

Related Commands

Command	Description
icmp-guard trusted-host	Sets the trusted host.

Platform Description N/A

11.95 show nfpp ip-guard hosts

Use this command to display the monitored host.

show nfpp ip-guard hosts [**statistics** | [[**vlan** *vid*] [**Interface** *interface-id*] [*ip-address* | mac-address]]]

Parameter Description

Parameter	Description
statistics	Displays the statistical information of the monitored host.
vid	The VLAN ID.
interface-id	The interface name.
ip-address	The IP address.
mac-address	The MAC address.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the statistical information of the monitored host.

```
Ruijie# show nfpp ip-guard hosts statistics
success    fail    total
-------    ----    -----
100        20       120

Ruijie#show nfpp ip-guard hosts
If column 1 shows '*', it means "hardware do not isolate host" .
VLAN  interface IP address   Reason     remain-time(s)
----  --------  ---------    -------     -------------
1     Gi0/1      1.1.1.1     ATTACK     110
```

```
2     Gi0/2      1.1.2.1     SCAN        61
Total:2 host(s)
```

Related Commands

Command	Description
clear nfpp ip-guard hosts	Clears the monitored host.

Platform Description N/A

11.96 show nfpp ip-guard summary

Use this command to display the configuration.

show nfpp ip-guard summary

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the configuration.

```
Ruijie# show nfpp ip-guard summary
(Format of column Rate-limit and  Attack-threshold is
per-src-ip/per-src-mac/per-port.)
Interface Status Isolate-period Rate-limit Attack-threshold Scan-threshold
Global     Enable  300            4/-/60    8/-/100         15
Gi 0/1      Enable  180            5/-/-      8/-/-           -
Gi 0/2      Disable 200            4/-/60    8/-/100         20

Maximum count of monitored hosts: 1000
Monitor period..300s
```

Field	Description
Interface(Global)	Global configuration
Status	Enables/Disables the anti-attack function.
Rate-limit	In the format of the rate-limit threshold for the source IP address/ the rate-limit threshold for the source MAC address/ the rate-limit threshold for the port

Attack-threshold	In the same format as the rate-limit.
-	No configuration.

Related Commands

Command	Description
ip-guard attack-threshold	Sets the global attack threshold.
ip-guard enable	Enables the IP anti-scan function.
ip-guard isolate-period	Sets the global isolate time.
ip-guard monitor-period	Sets the monitor period.
ip-guard monitored-host-limit	Sets the maximum number of the monitored hosts.
ip-guard rate-limit	Sets the global rate-limit threshold.
nfpp ip-guard enable	Enables the IP anti-scan function on the interface.
nfpp ip-guard isolate-period	Sets the isolate time.
nfpp ip-guard policy	Sets the rate-limit threshold and attack threshold.

Platform Description N/A

11.97 show nfpp ip-guard trusted-host

Use this command to display the trusted host free from being monitored.

show nfpp ip-guard summary

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the trusted host free from being monitored.

```
Ruijie# show nfpp ip-guard trusted-host
IP address     mask
---------      ------
1.1.1.0        255.255.255.0
1.1.2.0        255.255.255.0
```

```
Total.2 record(s)
```

Related Commands

Command	Description
ip-guard trusted-host	Sets the trusted host.

Platform Description N/A

11.98 show nfpp log

Use this command to display the NFPP log configuration.

show nfpp log summary

Use this command to display the NFPP log buffer area content.

show nfpp log buffer [**statistics**]

Parameter Description

Parameter	Description
statistics	Displays the statistical information of the NFPP log buffer area.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide When the log buffer area is full, the subsequent logs are to be dropped, and an entry with all attributes ”-” is displayed in the log buffer area. The administrator shall increase the capacity of the log buffer area or improve the rate of generating the syslog.

The generated syslog in the log buffer area carries with the timestamp, for example:

%NFPP_ARP_GUARD-4-DOS_DETECTED:

Host<IP=N/A,MAC=0000.0000.0004,port=Gi4/1,VLAN=1> was detected.(2009-07-01 13:00:00)

Configuration Examples The following example displays the NFPP log configuration.

```
Ruijie#show nfpp log summary
Total log buffer size : 10
Syslog rate : 1 entry per 2 seconds
Logging:
VLAN  1-3, 5
interface Gi 0/1
interface Gi 0/2
```

The following example displays the log number in the buffer area.

```
Ruijie#show nfpp log buffer statistics
There are 6 logs in buffer.
```

```
The following example shows the NFPP log buffer area:
Ruijie#show nfpp log buffer
Protocol VLAN  Interface IP address MAC address    Reason         Timestamp
------- ----  --------  ---------  -----------    ------         ---------
ARP    1     Gi0/1      1.1.1.1     -      DoS            2009-05-30
16:23:10
ARP    1     Gi0/1      1.1.1.1     -      ISOLATED       2009-05-30
16:23:10
ARP    1     Gi0/1      1.1.1.2     -       DoS            2009-05-30
16:23:15
ARP    1     Gi0/1      1.1.1.2     -       ISOLATE_FAILED 2009-05-30
16:23:15
ARP    1     Gi0/1      -         0000.0000.0001  SCAN           2009-05-30
16:30:10
ARP    -     Gi0/2      -         -          PORT_ATTACKED   2009-05-30
16:30:10
```

Field	Description
Protocol	ARP, IP, ICMP, DHCP,DHCPv6, NS-NA, RS, RA-REDIRECT
Reason	1. DoS 2. ISOLATED 3. ISOLATE_FAILE 4. SCAN 5. PORT_ATTACKED

Related Commands

Command	Description
clear nfpp log	Clears the NFPP log buffer area.

Platform Description N/A

11.99 show nfpp nd-guard hosts

Use this command to display the monitored host.

show nfpp nd-guard hosts [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*]]]

Parameter Description

Parameter	Description
statistics	Displays the statistics of the monitored host.
vid	Sets the VLAN ID.

interface-id	Sets the interface name and number.

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the statistics of the host monitored by ND-guard.

```
Ruijie#show nfpp nd-guard hosts statistics
success    fail    total
-------    ----    -----
10         2       12

The following example displays the host monitored by ND-guard. The
“remian-time(s)” refers to the remaining time of isolation.
Ruijie#show nfpp nd-guard hosts
If col_filter 1 shows '*', it means "hardware do not isolate host".
 VLAN    interface   ND-guard          remain-time(s)
 ----    ---------   --------          --------------
 -       Gi4/2       ns-na-guard       174
 -       Gi4/2       rs-guard          98
 -       Gi4/2       ra-redirect-guard  127
Total: 3 hosts
```

Prompt Messages N/A

Platform Description N/A

11.100 show nfpp nd-guard summary

Use this command to display the configuration.

show nfpp nd-guard summary

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the configuration.

```
Ruijie# show nfpp nd-guard summary
(Format of column Rate-limit and  Attack-threshold is NS-NA/RS/RA-REDIRECT.)
Interface Status Rate-limit Attack-threshold
Global     Enable  20/5/10    40/10/20
Gi 0/1      Enable  15/15/15   30/30/30
Gi 0/2      Disable -/5/30      -/10/50
```

Field	Description
Interface(Global)	Global configuration
Status	Enables/Disables the anti-attack function.
Rate-limit	In the format of the rate-limit threshold for the NS-NA/RS/RA-REDIRECT.
Attack-threshold	In the same format as the rate-limit.
-	No configuration.

Related Commands

Command	Description
nd-guard attack-threshold	Sets the global attack threshold.
nd-guard enable	Enables the ND anti-attack function.
nd-guard rate-limit	Sets the global rate-limit threshold.
nfpp nd-guard enable	Enables the ND anti-attack function on the interface.
nfpp nd-guard policy	Sets the rate-limit threshold and attack threshold.

Platform Description N/A

11.101 trusted-host

Use this command to set the trusted hosts free form monitoring. Use the no form of this command to restore the default setting,

trusted-host { *mac mac_mask* | *ip mask* | *IPv6/prefixlen* }

no trusted-host { **all** | *ip mask* | *IPv6/prefixlen* }

Parameter Description

Parameter	Description
ip	Sets the IP address.
mac	MAC address.
mac_mask	MAC address mask.

IPv6/prefixlen	IPv6 address and mask length
mask	IP mask.
all	Deletes the configuration of all trusted hosts with the no form of this command.

Defaults N/A

Command Mode NFPP define configuration mode.

Usage Guide The administrator can use this command to set the trusted host free from monitoring. The ICMP packets are allowed to sent to the trusted host CPU without any rate-limit and warning configuration.
Configure the mask to set all hosts in one network segment free from monitoring.
UP to 500 trusted hosts are supported.
Before configuring the trusted-host, the match type must be configured. If the message type configured by the match is Ipv4, the Ipv6 trusted addresses are not allowed. In the same way, if the message type is IPv6, the IPv4 trusted addresses are not allowed.

Configuration Examples The following example sets the trusted hosts free form monitoring.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# define tcp
Ruijie(config-nfpp-define)#trusted-host 1.1.1.1 255.255.255.255
```

Related Commands

Command	Description
show nfpp define trusted-host	Displays the trusted host configuration.

Platform Description N/A

12 SECURITY-LOG Commands

12.1 security-log audit-enable

Use this command to enable security log auditing. Use the no form of this command to disable security log auditing.

security-log audit-enable

no security-log audit-enable

Parameter Description

Parameter	Description
N/A	

Defaults The function is enabled by default.

Command Mode Global configuration mode

Usage Guide After enabling the security log auditing, the device will record key operations including account management, log event, system event, configuration change and security log event.

Configuration Examples The following example enables the security log auditing.

```
Ruijie# configure terminal

Ruijie(config)# security-log audit-enable

Ruijie(config)# end
```

Related Commands

Command	Description
N/A	

Platform Description N/A

12.2 security-log data-store-items

Use this command to configure the max storage capacity of security log.

security-log data-store-items *num*

Parameter Description

Parameter	Description
num	Local storage capacity. The max value varies with product

	capability. The min value is 500.

Defaults The max value varies with product capability.

Command Mode Global configuration mode

Usage Guide If the local storage space is insufficient, run this command to adjust the storage capacity.

Configuration Examples The following example configures the local storage capacity of security log as 5000.

```
Ruijie# configure terminal

Ruijie(config)# security-log data-store-items 5000

Ruijie(config)# end
```

Related Commands

Command	Description
N/A	

Platform Description N/A

12.3 security-log delete

Use this command to delete all logs of key operations.

security-log delete all

Parameter Description

Parameter	Description
N/A	

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Run this command to delete all key operation logs.

Configuration Examples The following example deletes all key operation logs.

```
Ruijie# security-log delete all
```

Related Commands

Command	Description
N/A	

Platform Description N/A

12.4 security-log data-store-days

Use this command to configure the local storage time of security log.

security-log data-store-days *day*

Parameter Description

Parameter	Description
day	Storage time, range: 1-66535.

Defaults 180 days

Command Mode Global configuration mode

Usage Guide The security log is stored locally for 180 days by default. The log exceeds the time will be deleted.

Configuration Examples The following example configures the storage time as 300 days.

```
Ruijie# configure terminal
Ruijie(config)# security-log data-store-days 300
Ruijie(config)# end
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

12.5 security-log auto-vacuum-time

Use this command to configure the aging time of security log.

security-log auto-vacuum-time *hh:mm:ss*

Parameter Description

Parameter	Description
hh:mm:ss	hour: minute: second.

Defaults 03:00:00 by default

Command Mode Global configuration mode

Usage Guide The device will check local log at 3 am each day. If any log exceeds the storage time, it will be deleted. Run this command to change the check time.

Configuration Examples The following example configures the aging time as 5:05 am.

```
Ruijie# configure terminal
Ruijie(config)# security-log auto-vacuum-time 05:05:00
Ruijie(config)# end
```

Related Commands

Command	Description
N/A	

Platform Description N/A

12.6 show security-log

Use this command to display all security logs.

show security-log

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Run this command to display all security logs.

Configuration Examples The following example displays all security logs.

```
Ruijie# show security-log
time, username, peerinfo, hostname, log-type: content
2019-01-01 10:00:02, ---, console, Ruijie, SEC_LOG: SECURITY_LOG enabled security log audit configuration successfully
2019-01-01 10:00:02, admin, vty0(192.168.111.111), Ruijie, SEC_LOG: SECURITY_LOG disabled security log audit configuration unsuccessfully
2019-01-01 10:00:02, admin, vty0(192.168.111.111), Ruijie, SEC_LOG: SECURITY_LOG deleted all security log successfully
```

……

Related Commands	Command	Description
	N/A	

Platform Description N/A

12.7 show security-log detail

Use this command to display the detailed log information which can be filtered by time, type, username, host name, etc.

show security-log detail { **all |** { **from** *yyyy mm dd hh:mm:ss* **to** *yyyy mm dd hh:mm:ss* } } [**log-type** { **SEC_LOG** | **ACC_MNT** | **LOGIN** | **SYS** | **CONFIG** | **OTHER** }] [**user** *username*] [**hostname** *hostname*] [**peerinfo** *peerinfo*] **{** [**order-by** [**time** | **log-type**] { **asc** | **desc** } [**start-item** *integer1* **end-item** *integer2*]] **}**

Use this command to export the detailed log information which can be filtered by time, type, username, host name, etc.

show security-log detail export { **all |** { **from** *yyyy mm dd hh:mm:ss* **to** *yyyy mm dd hh:mm:ss* } } [**log-type** { **SEC_LOG** | **ACC_MNT** | **LOGIN** | **SYS** | **CONFIG** | **OTHER** }] [**user** *username*] [**hostname** *hostname*] [**peerinfo** *peerinfo*] [**order-by** [**time** | **log-type**] { **asc** | **desc** } [**start-item** *integer1* **end-item** *integer2*]]

Use this command to display the log statistics which can be filtered by time, type, username, host name, etc.

show security-log detail stat { **all |** { **from** *yyyy mm dd hh:mm:ss* **to** *yyyy mm dd hh:mm:ss* } } [**log-type** { **SEC_LOG** | **ACC_MNT** | **LOGIN** | **SYS** | **CONFIG** | **OTHER** }] [**user** *username*] [**hostname** *hostname*] [**peerinfo** *peerinfo*]

Parameter Description

Parameter	Description
yyyy mm dd	Year month day
hh:mm:ss	Hour: minute: second
log-type	Log types: 1) SEC_LOG (security-log-event) 2) ACC_MNT (account-management) 3) LOGIN (login-event) 4) SYS (system-event) 5) CONFIG (configuration-changes) 6)OTHER (other)
username	Filtering condition: username (exact match)
hostname	Filtering condition: host name (exact match)
peerinfo	Filtering condition: device information, including alias, IP or combination

	(fuzzy match)
integer1	Start position
integer2	End position

Defaults N/A

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide This command is used to search or export the detailed security log information.

Configuration Examples The following example searches the security log information of userA from 0:00 on October 10, 2019 to 24:00 on October 22, 2019, and sorts result in descending order of time. Only the first 20 records are displayed.

```
Ruijie# show security-log detail from 2019 10 10 00:00:00 to 2019 10 22 23:59:59 user userA order-by time desc start-item 1 end-item 20

time, username, peerinfo, hostname, log-type: content

2019-10-22 10:00:03, ---, console, Ruijie, SEC_LOG: SECURITY_LOG enabled security log audit configuration successfully

2019-10-22 10:00:02, admin, vty0(192.168.111.111), Ruijie, SEC_LOG: SECURITY_LOG disabled security log audit configuration unsuccessfully

2019-10-22 10:00:02, admin, vty0(192.168.111.111), Ruijie, SEC_LOG: SECURITY_LOG deleted all security log successfully

……
```

The following example displays all security log information.

```
Ruijie# show security-log detail all

time, username, peerinfo, hostname, log-type: content

2019-10-22 10:00:02, admin, vty0(192.168.111.111), Ruijie, SEC_LOG: SECURITY_LOG deleted all security log successfully

2019-10-22 10:00:02, admin, vty0(192.168.111.111), Ruijie, SEC_LOG: SECURITY_LOG disabled security log audit configuration unsuccessfully

2019-10-22 10:00:03, ---, console, Ruijie, SEC_LOG: SECURITY_LOG enabled security log audit configuration successfully

……
```

The following example exports the security log information of userA from 0:00 on October 10, 2019 to

24:00 on October 22, 2019.

```
Ruijie# show security-log detail export from 2019 10 10 00:00:00 to 2019 10 22 23:59:59 user userA

Export file: tmp:mng/security_log/export_file/log_20191022_110410_535250.csv
```

Note: the user can run the copy command to download the file:

```
Ruijie#copy tmp:mng/security_log/export_file/log_20191022_110410_535250.csv
tftp://192.168.1.1/security_log.csv
```

The following example searches the security log statistics of userA from 0:00 on October 10, 2019 to 24:00 on October 22, 2019.

```
Ruijie# show security-log detail stat from 2019 10 10 00:00:00 to 2019 10 22 23:59:59 user userA

Count:555
```

12.8 show security-log config

Use this command to search the security log configuration.

show security-log config

Parameter Description	**Parameter**	**Description**
	N/A	

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Run this command to check security log configuration, including capacity limit, storage time and aging time.

Configuration Examples The following example displays the security log configuration.

```
Ruijie# show security-log config

Security-log audit: enable

Limit number: 10000

Store days: 180

Auto vacuum time: 03:00:00
```

Platform Description N/A

12.9 show security-log statistics

Use this command to search the security log statistics.

show security-log statistics

Parameter Description	Parameter	Description
	N/A	

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Run this command to display security log statistics, including:
Number of current logs: xxx
Number of history logs: xxx in total, xxx were covered
Number of aged los: xxx
Last deleting record: xxx

Configuration Examples The following example displays security log statistics.

```
Ruijie# show security-log statistics
Current storage record count: 9000
Historical record count: have written 11111, overwritten 1111
Aging record count: 1000
Last delete record: 2019-10-24 10:00:00 userA vty0(192.168.1.1) Ruijie
SEC_LOG: SECURITY_LOG deleted all security log successfully
```

Related Commands	Command	Description
	N/A	

Platform Description N/A

12.10 show security-log info

Use this command to display security log statistics during processing.

show security-log info

Parameter Description	Parameter	Description
	N/A	

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to display the statistics during security log processing, including:
Number of log received successfully: xxx, receive failures: xxx
Number of buffered logs: xxx
Number of logs stored in flash: xxx
History sync flashes: xxx, sync failures: xxx
Reason for last sync failure: xxx (not display if no failure)
Next time to sync flash: HH:MM:SS

Configuration Examples The following example displays security log statistics during processing.

```
Ruijie# show security-log info

Receive log count: 2000, err 1

Current cached record count: 1999

Current store-in-flash record count: 5000

Historital sync flash count: 100,err 1

Reason for last sync failure: Failed to sync security logs to file database.

Next time to sync flash: 11:11:11
```

Platform Description N/A

ACL & QoS Configuration Commands

1. ACL Commands
2. QoS Commands
3. MMU Commands

1 ACL Commands

1.1 command ID table

For IDs used in the following commands, refer to the command ID table below:

ID	Meaning
ID	Number of access list. Range: Standard IP ACL: 1 to 99, 1300 to 1999 Extended IP ACL: 100 to 199,2000 to 2699 Extended MAC ACL: 700 to 799 Extended expert ACL: 2700 to 2899
name	ACL name
sn	ACL SN (products can be set according to the priority)
start-sn	Start sequence number
inc-sn	Sequence number increment
deny	If matched, access is denied.
permit	If matched, access is permitted.
port	Protocol number. For IPv6, this field can be IPv6, ICMP, TCP, UDP and numbers 0 to 255. For IPv4, it can be one of EIGRP, GRE, IPINIP, IGMP, NOS, OSPF, ICMP, UDP, TCP,AHP, ESP, PCP, PIM and IP, or it can be numbers 0 to 255 that represent the IP protocol. It is described when some important protocols, such as ICMP, TCP and UDP, are listed individually.
interface *idx*	Interface index
src	Packet source IP address (host address or network address)
src-wildcard	Source IP address wildcard. It can be discontinuous, for example, 0.255.0.32.
src-ipv6-pfix	Source IPv6 network address or network type
dst-ipv6-pfix	Destination IPv6 network address or network type
pfix-len	Prefix mask length
src-ipv6-addr	Source IPv6 address
dst-ipv6-addr	Destination IPv6 address
dscp	Differential service code point, and code point value. Range: 0 to 63
flow-label	Flow label in the range 0 to 1048575
dst	Packet destination IP address (host address or network address)
dst-wildcard	Destination IP address wildcard. It can be discontinuous, such as 0.255.0.32
fragment	Packet fragment filtering.

fragment-ipid *fragment-ipid*	Fragment ID of the header in segmented packet
precedence	Packet precedence value (0 to 7)
range	The layer 4 port number range of the packet.
time-range tm-rng-name	Time range of packet filtering, named *tm-rng-name*
tos	Type of service (0 to 15)
cos	cos of service (0-7)
cos inner *cos*	cos of the packet tag
icmp-type	ICMP message type (0 to 255)
icmp-code	ICMP message type code (0 to 255)
icmp-message	ICMP message type name (0 to 255)
operator port[port]	Operator (lt-smaller, eq-equal, gt-greater, neq-unequal, range-range) *port* indicates the port number. Dyadic operation needs two port numbers, while other operators only need one port number
src-mac-addr	Physical address of the source host
dst-mac-addr	Physical address of the destination host
VID vid	VLAN ID
VID inner vid	VID of the tag
ethernet-type	Ethernet protocol type. 0x value can be entered.
match-all *tcpf*	Match all bits of the TCP flag.
established	Match the RST or ACK bit of the TCP flag.
text	Remark text
in	Filter the incoming packets of the interface
out	Filter the outgoing packets of the interface
{rule mask offset}$^{+}$	rule: Hexadecimal value field; mask: Hexadecimal mask field offset: Refer to the offset table "+" sign indicates at least one group
log	Output the matching syslog when the packet matches the ACL rule.

The fields in the packet are as follows:

AA AA AA AA AA AA BB BB BB BB BB BB CC CC DD DD

DD DD EE FF GG HH HH HH II II JJ KK LL LL MM MM

NN NN OO PP QQ QQ RR RR RR RR SS SS SS SS TT TT

UU UU VV VV VV VV WW WW WW WW XY ZZ aa aa bb bb

The corresponding offset table is as follows:

Letter	Meaning	Offset	Letter	Meaning	Offset
A	Destination MAC	0	O	TTL field	34

B	Source MAC	6	P	Protocol number	35
C	Data frame length field	12	Q	IP check sum	36
D	VLAN tag field	14	R	Source IP address	38
E	DSAP (Destination Service Access Point) field	18	S	Destination IP address	42
F	SSAP (Source Service Access Point) field	19	T	TCP source port	46
G	Ctrl field	20	U	TCP destination port	48
H	Org Code field	21	V	Sequence number	50
I	Encapsulated data type	24	W	Confirmation field	54
J	IP version number	26	XY	IP header length and reserved bits	58
K	TOS field	27	Z	Resrved bits and flags bit	59
L	Length of IP packet	28	a	Windows size field	60
M	ID	30	b	Others	62
N	Flags field	32			

The offsets of fields in the above table are their offsets in 802.3 data frames of SNAP+tag.

1.2 access-list

Use this command to create an access list to filter data packets. Use the **no** form of this command to remove the specified access list.

1. Standard IP access list (1 to 99, 1300 to 1999)

access-list *id* { **deny** | **permit** } { *source source-wildcard* | **host** *source* | **any | interface** *idx* } [**time-range** *tm-range-name*] [**log**]

2. Extended IP access list (100 to 199, 2000 to 2699)

access-list *id* {**deny** | **permit**} **protocol** {*source source-wildcard* | **host** *source* | **any| interface** *idx* } {*destination destination-wildcard* | **host** *destination* | **any**} [[**precedence** *precedence*] [**tos** *tos*] | [**dscp** *dscp*] [**ecn** *ecn*]] [**fragment**] [**fragment-ipid** *fragment-ipid*] [**range** *lower upper*] [**time-range** *time-range-name*] [**log**]

3. Extended MAC access list (700 to 799)

access-list *id* {**deny** | **permit**} {**any** | **host** *source-mac-address* | *source-mac-address mask* } {**any** | **host** *destination-mac-address* | *destination-mac-address mask* } [*ethernet-type*][**cos** [*out*][**inner** *in*]]

4. Extended expert access list (2700 to 2899)

access-list *id* { **deny** | **permit** } [*protocol* | [*ethernet-type*] **[cos** [*out*] **[inner** *in*]]] [**VID** [*out*] [**inner** *in*]] { *source source-wildcard* **| host** *source* | **any** } { **host** *source-mac-address* | **any** } { *destination destination-wildcard* | **host** *destination* | **any** } { **host** *destination-mac-address* | **any** }] [[**precedence** *precedence*] [**tos** *tos*] | [**dscp** *dscp*] [**ecn** *ecn*]] [**fragment**] [**fragment-ipid** *fragment-ipid*] [**range** *lower upper*] [[**udf** *udf-id header pos value mask*] | [**int-flag-a**] [**int-flag-b**]] [**time-range** *time-range-name*]

- When you select the Ethernet-type field or cos field:

access-list *id* {**deny** | **permit**} {*ethernet-type*| **cos** [*out*][**inner** *in*]} [**VID** [*out*][**inner** *in*]] {**source** *source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any** } {**destination**

destination-wildcard | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**udf** *udf-id header pos value mask*] [**time-range** *time-range-name*]

- When you select the protocol field:

access-list *id* { **deny** | **permit** } *protocol* [**VID** [*out*] [**inner** *in*]] { *source source-wildcard* | **host** *source* | **any** } { **host** *source-mac-address* | **any** } { *destination destination-wildcard* | **host** *destination* | **any** } { **host** *destination-mac-address* | **any** } [[**precedence** *precedence*] [**tos** *tos*] | [**dscp** *dscp*] [**ecn** *ecn*]] [**fragment**] [**fragment-ipid** *fragment-ipid*] [**range** *lower upper*] [[**udf** *udf-id header pos value mask*] | [int-flag-a] [int-flag-b]] [**time-range** *time-range-name*]

- Extended expert ACLs of some important protocols:

Internet Control Message Protocol (ICMP)
access-list *id* { **deny** | **permit** } **icmp** [**VID** [*out*] [**inner** *in*]] { *source source-wildcard* | **host** *source* | **any** } { **host** *source-mac-address* | **any** } { *destination destination-wildcard* | **host** *destination* | **any** } { **host** *destination-mac-address* | **any** } [*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [[**precedence** *precedence*] [**tos** *tos*] | [**dscp** *dscp*] [**ecn** *ecn*]] [**fragment**] [**fragment-ipid** *fragment-ipid*] [**udf** *udf-id header pos value mask*] [**time-range** *time-range-name*]
Transmission Control Protocol (TCP)
access-list *id* { **deny** | **permit** } **tcp** [**VID** [*out*] [**inner** *in*]] { *source source-wildcard* | **host** *Source* | **any** } { **host** *source-mac-address* | **any** } [**operator** port [*port*]] { *destination destination-wildcard* | **host** *destination* | **any** } { **host** *destination-mac-address* | **any** } [**operator port** [*port*]] [[**precedence** *precedence*] [**tos** *tos*] | [**dscp** *dscp*] [**ecn** *ecn*]] [**fragment**] [**fragment-ipid** *fragment-ipid*] [**range** *lower upper*] [**time-range** *time-range-name*] [**match-all** *tcp-flag* | **established**] [[**udf** *udf-id header pos value mask*] | [int-flag-a] [int-flag-b]]
User Datagram Protocol (UDP)
access-list *id* { **deny** | **permit** } **udp**[**VID** [*out*] [**inner** *in*]] { *source source –wildcard* | **host** *source* | **any** } { **host** *source-mac-address* | **any** } [**operator port** [*port*]] { *destination destination-wildcard* | **host** *destination* | **any** } { **host** *destination-mac-address* | **any** } [**operator port** [*port*]] [[**precedence** *precedence*] [**tos** *tos*] | [**dscp** *dscp*] [**ecn** *ecn*]] [**fragment**] [**fragment-ipid** *fragment-ipid*] [**range** *lower upper*] [[**udf** *udf-id header pos value mask*] | [int-flag-a] [int-flag-b]] [**time-range** *time-range-name*]
Virtual Extensible LAN(VXLAN):
access-list *id* { **deny** | **permit** } **vxlan** {**tcp** | **udp}** { *source source –wildcard* | **host** *source* | **any** } [**eq** *port*] { *destination destination-wildcard* | **host** *destination* | **any** } [**eq** *port*] [**tagged**] [**udp-dport** *dport*] [**time-range** *time-range-name*]

Parameter Description

Parameter	Description
id	Access list number. The ranges available are 1 to 99, 100 to 199, 1300 to 1999, 2000 to 2699, 2700 to 2899, and 700 to 799.
deny	If not matched, access is denied.
permit	If matched, access is permitted.
source	Specify the source IP address (host address or network address).
source-wildcard	It can be discontinuous, for example, 0.255.0.32.

protocol	IP protocol number. It can be one of EIGRP, GRE, IPINIP, IGMP, NOS, OSPF, ICMP, UDP, TCP, and IP. It can also be a number representing the IP protocol between 0 and 255. The important protocols such as ICMP, TCP, and UDP are described separately.
destination	Specify the destination IP address (host address or network address).
destination-wildcard	Wildcard of the destination IP address. It can be discontinuous, for example, 0.255.0.32.
fragment	Packet fragment filtering
fragment-ipid *fragment-ipid*	Fragment ID of the header in segmented packet
precedence	Specify the packet priority.
precedence	Packet precedence value (0 to 7)
range	Layer4 port number range of the packet.
lower	Lower limit of the layer4 port number.
upper	Upper limit of the layer4 port number.
time-range	Time range of packet filtering
time-range-name	Time range name of packet filtering
tos	Specify type of service.
tos	ToS value (0 to 15)
dscp	Differentiated service code point
dscp	Code point value, ranging from 0 to 63
ecn	Specifies the congestion notification type.
ecn	Specifies the congestion notification type value (0 to 3).
icmp-type	ICMP message type (0 to 255)
icmp-code	ICMP message type code (0 to 255)
icmp-message	ICMP message type name
operator	Operator (lt-smaller, eq-equal, gt-greater, neq-unequal, range-range)
port [*port*]	Port number; *range* needs two port numbers, while other operators only need one port number.
host *source-mac-address*	Source physical address
host *destination-mac-address*	Destination physical address
VID *vid*	Match the specified VID.
ethernet-type	Ethernet type
match-all	Match all the bits of the TCP flag.
tcp-flag	Match the TCP flag.
established	Match the RST or ACK bits, not other bits of the TCP flag.
text	Note
udf	Indicates the customized field.
udf-id	Indicates the ID of UDF. (Range:1 to 8)
header	Indicates the protocol layer.
pos	Indicates the offset. (Range:0 to 126)
value	Indicates the data (2 bytes).

mask	Indicates the mask (2 bytes).
int-flag	Matches the int header of the packets.
mpls	Matches the IP field of the MPLS packets.
vxlan	Matches the quintet of the VXLAN packets.
tagged	Matches the tagged VXLAN packets.
udp-dport	Matches the UDP port ID of the VXLAN packets.
dport	UDP port ID.

Defaults

None

Command Mode

Global configuration mode.

Usage Guide

-

To filter the data by using the access control list, you must first define a series of rule statements by using the access list. You can use ACLs of the appropriate types according to the security needs:
The standard IP ACL (1 to 99, 1300 to 1999) only controls the source IP addresses.
The extended IP ACL (100 to 199, 2000 to 2699) can enforce strict control over the source and destination IP addresses.
The extended MAC ACL (700 to 799) can match against the source/destination MAC addresses and Ethernet type.
The extended expert access list (2700 to 2899) is a combination of the above and can match and filter the VLAN ID.
For the layer-3 routing protocols including the unicast routing protocol and multicast routing protocol, the following parameters are not supported by the ACL: **precedence** *precedence*/**tos** *tos*/**fragments/fragment-ipid** *fragment-ipid*/**range** *lower upper*/**time-range** *time-range-name*
The TCP Flag includes part or all of the following:

- urg
- ack
- psh
- rst
- syn
- fin

The packet precedence is as below:

- critical
- flash
- flash-override
- immediate
- internet

- network
- priority
- routine

The service types are as below:

- max-reliability
- max-throughput
- min-delay
- min-monetary-cost
- normal

The ICMP message types are as below:

- administratively-prohibited
- dod-host-prohibited
- dod-net-prohibited
- echo
- echo-reply
- fragment-time-exceeded
- general-parameter-problem
- host-isolated
- host-precedence-unreachable
- host-redirect
- host-tos-redirect
- host-tos-unreachable
- host-unknown
- host-unreachable
- information-reply
- information-request
- mask-reply
- mask-request
- mobile-redirect
- net-redirect
- net-tos-redirect
- net-tos-unreachable
- net-unreachable

- network-unknown
- no-room-for-option
- option-missing
- packet-too-big
- parameter-problem
- port-unreachable
- precedence-unreachable
- protocol-unreachable
- redirect
- device-advertisement
- device-solicitation
- source-quench
- source-route-failed
- time-exceeded
- timestamp-reply
- timestamp-request
- ttl-exceeded
- unreachable

The TCP ports are as follows. A port can be specified by port name and port number:

- bgp
- chargen
- cmd
- daytime
- discard
- domain
- echo
- exec
- finger
- ftp
- ftp-data
- gopher
- hostname
- ident

- irc
- klogin
- kshell
- ldp
- login
- nntp
- pim-auto-rp
- pop2
- pop3
- smtp
- sunrpc
- syslog
- tacacs
- talk
- telnet
- time
- uucp
- whois
- www

The UDP ports are as follows. A UDP port can be specified by port name and port number.

- biff
- bootpc
- bootps
- discard
- dnsix
- domain
- echo
- isakmp
- mobile-ip
- nameserver
- netbios-dgm
- netbios-ns
- netbios-ss

- ntp
- pim-auto-rp
- rip
- snmp
- snmptrap
- sunrpc
- syslog
- tacacs
- talk
- tftp
- time
- who
- xdmcp

The Ethernet types are as below:

- aarp
- appletalk
- decnet-iv
- diagnostic
- etype-6000
- etype-8042
- lat
- lavc-sca
- mop-console
- mop-dump
- mumps
- netbios
- vines-echo
- xns-idp

The UDF headers are as below:

- l2-head
- l3-head
- l4-head
- l5-head

Configuration Examples

1. Example of the standard IP ACL

The following basic IP ACL allows the packets whose source IP addresses are 192.168.1.64 - 192.168.1.127 to pass:

```
Ruijie (config)#access-list 1 permit 192.168.1.64 0.0.0.63
```

2. Example of the extended IP ACL

The following extended IP ACL allows the DNS messages and ICMP messages to pass:

```
Ruijie(config)#access-list 102 permit tcp any any eq domain log
Ruijie(config)#access-list 102 permit udp any any eq domain log
Ruijie(config)#access-list 102 permit icmp any any echo log
Ruijie(config)#access-list 102 permit icmp any any echo-reply
```

3. Example of the extended MAC ACL

This example shows how to deny the host with the MAC address 00d0f8000c0c to provide service with the protocol type 100 on gigabit Ethernet port 1/1. The configuration procedure is as below:

```
Ruijie(config)#access-list 702 deny host 00d0f8000c0c any aarp
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mac access-group 702 in
```

4. Example of the extended expert ACL

The following example shows how to create and display an extended expert ACL. This expert ACL denies all the TCP packets with the source IP address 192.168.12.3 and the source MAC address 00d0.f800.0044.

```
Ruijie(config)#access-list 2702 deny tcp host 192.168.12.3 mac 00d0.f800.0044
any any
Ruijie(config)# access-list 2702 permit any any any any
Ruijie(config)# show access-lists
expert access-list extended 2702
10 deny tcp  host  192.168.12.3 mac 00d0.f800.0044 any any
```

10 permit any any any any

Related Commands

Command	Description
show access-lists	Show all the ACLs.

mac access-group	Apply the extended MAC ACL on the interface.

Platform Description N/A

1.3 access-list list-remark

Use this command to write a helpful comment (remark) for an access list. Use the **no** form of this command to remove the remark.

access-list *id* **list-remark** *text*

no access-list *id* **list-remark**

Parameter Description

Parameter	Description
id	Access list number. Standard IP ACL: 1 to 99, 1300 to 1999. Extended IP ACL: 100 to 199. 2000 to 2699. Extended MAC ACL: 700 to 799. Extended Expert ACL: 2700 to 2899.
text	Comment that describes the access list.

Defaults The access lists have no remarks by default.

Command Mode Global configuration mode

Usage Guide You can use this command to write a helpful comment for a specified access list. If the specified access list does not exist, the command will create the access list, then add remarks for the access list.

Configuration Examples The following example writes a comment of “this acl is to filter the host 192.168.4.12” for ACL100.

```
Ruijie(config)# ip access-list extended 100
Ruijie(config)# access-list 100 list-remark this acl is to filter the host
192.168.4.12
```

Related Commands

Command	Description
show access- lists	Displays all access lists, including the remarks for the access lists.
show access-lists *id*	Displays the access list of a specified number, including the remarks for the access list.
show access-lists *name*	Displays the access list of a specified name, including the remarks for the access list.

Platform Description

1.4 access-list remark

Use this command to write a helpful comment (remark) for an entry in a numbered access list. Use the **no** form of this command to remove the remark.

access-list *id* **remark** *text*

no access-list *id* **remark** *text*

Parameter Description

Parameter	Description
id	Access list number. Standard IP ACL: 1 to 99, 1300 to 1999. Extended IP ACL: 100 to 199. 2000 to 2699. Extended MAC ACL: 700 to 799. Extended Expert ACL: 2700 to 2899.
text	Comment that describes the access list entry.

Defaults The access list entries have no remarks by default.

Command Mode Global configuration mode

Usage Guide You can use this command to write a helpful comment for an entry in a specified access list. If the specified access list does not exist, the command will create the access list, then add remarks for the access entry.

Configuration Examples The following example writes a comment for an entry in ACL102.

```
Ruijie(config)# access-list 102 remark deny-host-10.1.1.1
```

Related Commands

Command	Description
show access-lists	Displays all access lists, including the remarks for the access list entries.
show access-lists *id*	Displays the access list of a specified number, including the remarks for the access list entry.
show access-lists *name*	Displays the access list of a specified name, including the remarks for the access list entry.

Platform Description

1.5 clear counters access-list

Use this command to clear counters of packets matching ACLs.

clear counters access-list [*id* | *name*]

Parameter Description

Parameter	Description
id	Access list number
name	Access list name

Defaults

Command Mode Privileged EXEC mode

Usage Guide This command is used to clear the counters of packets matching the specified or all ACLs.

Configuration Examples The following example clears the packet matching counter of ACL No. 2700:

```
Ruijie #show access-lists 2700
expert access-list extended 2700
   10 permit ip VID 4 host 192.168.3.55 any host 192.168.99.6 any  (88 matches)
   20 deny tcp any any eq login any any (33455 matches)
   30 permit tcp any any host 192.168.6.9 any (10 matches)

Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# clear expert access-list counters 2700
Ruijie(config)# end
Ruijie #show access-lists 2700
expert access-list extended 2700
   10 permit ip VID 4 host 192.168.3.55 any host 192.168.99.6 any
   20 deny tcp any any eq login any any
   30 permit tcp any any host 192.168.6.9 any
```

Related Commands

Command	Description
expert access-list	Defines an expert ACL.
deny	Defines a deny ACL entry.
permit	Defines a permits ACL entry.

Platform N/A

Description

1.6 clear access-list counters

Use this command to clear counters of packets matching the deny entries in ACLs.

clear access-list counters [*id* | *name*]

Parameter Description

Parameter	Description
id	Access list number
name	Access list name

Defaults

Command Mode Privileged EXEC mode

Usage Guide This command is used to clear the counters of packets matching the deny entries in ACLs.

Configuration Examples The following example clears the packet matching counter of ACL No. 1:

Before configuration:

```
Ruijie #show access-lists
ip access-list standard 1
   10 deny host 50.1.1.2 (10 matches)
   20 permit host 60.1.1.2 (15 matches)
   (10 packets filtered)
```

After configuration:

```
Ruijie# end
Ruijie# clear access-list counters
Ruijie# show access-lists
ip access-list standard 1
   10 deny host 50.1.1.2 (10 matches)
   20 permit host 60.1.1.2 (15 matches)
```

Related Commands

Command	Description
expert access-list	Defines an expert ACL.
deny	Defines a deny ACL entry.
permit	Defines a permits ACL entry.

Platform Description N/A

1.7 deny

One or multiple **deny** conditions are used to determine whether to forward or discard the packet. In ACL configuration mode, you can modify the existent ACL or configure according to the protocol details.

1. Standard IP ACL

[*sn*] **deny** {*source source-wildcard* | **host** *source* | **any| interface** *idx* }[**time-range** *tm-range-name*] [**log**]

2. Extended IP ACL

[*sn*] **deny** *protocol source source-wildcard destination destination-wildcard* [[**precedence** *precedence*] [**tos** *tos*] | [**dscp** *dscp*] [**ecn** *ecn*]] [**fragment**] [**fragment-ipid** *fragment-ipid*] [**range** *lower upper*] [**udf** *udf-id header pos value mask*] [**time-range** *time-range-name*] [**log**]

Extended IP ACLs of some important protocols:

- Internet Control Message Prot (ICMP)

[*sn*] **deny icmp** { *source source-wildcard* | **host** *source* | **any** } { *destination destination-wildcard* | **host** *destination* | **any** } [*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**fragment-ipid** *fragment-ipid*] [**udf** *udf-id header pos value mask*] [**time-range** *time-range-name*]

- Transmission Control Protocol (TCP)

[*sn*] **deny tcp** { *source source-wildcard* | **host** *Source* | **any** } [*operator* **port** [*port*]] { *destination destination-wildcard* | **host** *destination* | **any** } [*operator* **port** [*port*]] [[**precedence** *precedence*] [**tos** *tos*] | [**dscp** *dscp*] [**ecn** *ecn*]] [**fragment**] [**fragment-ipid** *fragment-ipid*] [**range** *lower upper*] [**udf** *udf-id header pos value mask*] [**time-range** *time-range-name*] [**match-all** *tcp-flag* | **established**]

- User Datagram Protocol (UDP)

[*sn*] **deny udp** { *source source –wildcard* | **host** *source* | **any** } [*operator* **port** [*port*]] { *destination destination-wildcard* | **host** *destination* | **any** } [*operator* **port** [*port*]] [[**precedence** *precedence*] [**tos** *tos*] | [**dscp** *dscp*] [**ecn** *ecn*]] [**fragment**] [**fragment-ipid** *fragment-ipid*] [**range** *lower upper*] [**udf** *udf-id header pos value mask*] [**time-range** *time-range-name*]

3. Extended MAC ACL

[*sn*] **deny** { **any** | **host** *source-mac-address* } { **any** | **host** *destination-mac-address* } [*ethernet-type*] [**cos** [*out*] [**inner** *in*]]

4. Extended expert ACL

[*sn*] **deny**[*protocol* | [*ethernet-type*] [**cos** [*out*] [**inner** *in*]]] **[[VID** [*out*] **[inner** *in*]]] { *source source-wildcard* | **host** *source* | **any**}{**host** *source-mac-address* | **any** } { *destination destination-wildcard* | **host** *destination* | **any** } { **host** *destination-mac-address* | **any** } [[**precedence** *precedence*] [**tos** *tos*] | [**dscp** *dscp*] [**ecn** *ecn*]] [**fragment**] [**fragment-ipid** *fragment-ipid*] [**range** *lower upper*] [[**udf** *udf-id header pos value mask*] | [int-flag-a] [int-flag-b]] [**time-range** *time-range-name*]

- When you select the ethernet-type field or cos field:

[*sn*] **deny** {[*ethernet-type*}[**cos** [*out*] [**inner** *in*]]} [[**VID** [*out*][**inner** *in*]]] {*source source-wildcard* | **host**

source | **any**} {**host** *source-mac-address* | **any** } {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**udf** *udf-id header pos value mask*] [**time-range** *time-range-name*]

- When you select the protocol field:

[*sn*] **deny protocol [[VID** [*out*] **[inner** *in*]]] **{** *source source-wildcard* | **host** *source* | **any** } { **host** *source-mac-address* | **any** } { *destinationdestination-wildcard* | **host** *destination* | **any** } { **host** *destination-mac-address* | **any** } [[**precedence** *precedence*] [**tos** *tos*] | [**dscp** *dscp*] [**ecn** *ecn*]] [**fragment**] [**fragment-ipid** *fragment-ipid*] [**range** *lower upper*] [[**udf** *udf-id header pos value mask*] | [int-flag-a] [int-flag-b]] [**time-range** *time-range-name*]

- Extended expert ACLs of some important protocols

Internet Control Message Protocol (ICMP)

[*sn*] **deny icmp** [[**VID** [*out*] **[inner** *in*]]] **{** *source source-wildcard* | **host** *source* | **any** } { **host** *source-mac-address* | **any** } { *destination destination-wildcard* | **host** *destination* | **any** } { **host** *destination-mac-address* | **any** } [*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [[**precedence** *precedence*] [**tos** *tos*] | [**dscp** *dscp*] [**ecn** *ecn*]] [**fragment**] [**fragment-ipid** *fragment-ipid*] [**udf** *udf-id header pos value mask*] [**time-range** *time-range-name*]

Transmission Control Protocol (TCP)

[*sn*] **deny tcp** [[**VID** [*out*] **[inner** *in*]]] **{** *source source-wildcard* | **host** *Source* | **any** } { **host** *source-mac-address* | **any** } [*operator* **port** [*port*]] { *destination destination-wildcard* | **host** *destination* | **any** } { **host** *destination-mac-address* | **any** } [*operator* **port** [*port*]] [[**precedence** *precedence*] [**tos** *tos*] | [**dscp** *dscp*] [**ecn** *ecn*]] [**fragment**] [**fragment-ipid** *fragment-ipid*] [**range** *lower upper*] [**time-range** *time-range-name*] [**match-all** *tcp-flag* | **established**] [[**udf** *udf-id header pos value mask*] | [int-flag-a] [int-flag-b]]

User Datagram Protocol (UDP)

[*sn*] **deny udp [[VID** [*out*] **[inner** *in*]]] **{** *source source –wildcard* | **host** *source* | **any** } { **host** *source-mac-address* | **any** } [*operator* **port** [*port*]] { *destination destination-wildcard* | **host** *destination* | **any** } { **host** *destination-mac-address* | **any** } [*operator* **port** [*port*]] [[**precedence** *precedence*] [**tos** *tos*] | [**dscp** *dscp*] [**ecn** *ecn*]] [**fragment**] [**fragment-ipid** *fragment-ipid*] [**range** *lower upper*] [[**udf** *udf-id header pos value mask*] | [int-flag-a] [int-flag-b]] [**time-range** *time-range-name*]

Address Resolution Protocol (ARP)

[*sn*] **deny arp** {**vid** *vlan-id*}[**host** *source-mac-address* | **any**] [**host** *destination –mac-address* | **any**] {*sender-ip sender-ip–wildcard* | **host** *sender-ip* | **any**} {*sender-mac sender-mac-wildcard* | **host** *sender-mac* | **any**} {*target-ip target-ip–wildcard* | **host** *target-ip* | **any**}[**udf** *udf-id header pos value mask*]

Virtual Extensible LAN(VXLAN):

[*sn*] **deny vxlan** {**tcp** | **udp}** { *source source –wildcard* | **host** *source* | **any** } [**eq** *port*] { *destination destination-wildcard* | **host** *destination* | **any** } [**eq** *port*] [**tagged**] [**udp-dport** *dport*] [**time-range** *time-range-name*]

5. Extended IPv6 ACL

[*sn*] **deny protocol**{*source-ipv6-prefix*/*prefix-length* | **any** | **host** *source-ipv6-address* } {*destination-ipv6-prefix / prefix-length* | **any**| *hostdestination-ipv6-address*} [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragment**] [**range** *lower upper*] [**udf** *udf-id header pos value mask*] [**time-range**

time-range-name]

Extended ipv6 ACLs of some important protocols:

Internet Control Message Protocol (ICMP)

[*sn*]**deny icmp** {*source-ipv6-prefix / prefix-length* | *any source-ipv6-address* | **host**} {*destination-ipv6-prefix / prefix-length*| **host** *destination-ipv6-address* | **any**} [*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragment**] [**udf** *udf-id header pos value mask*] [**time-range** *time-range-name*]

Transmission Control Protocol (TCP)

[*sn*] **deny tcp** {*source-ipv6-prefix / prefix-length* | **host***source-ipv6-address* | **any**}[*operator* **port**[*port*]] {*destination-ipv6-prefix /prefix-length* | **host** *destination-ipv6-address* | **any**} [*operator* **port** [*port*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragment**] [**range** *lower upper*] [**udf** *udf-id header pos value mask*] [**time-range** *time-range-name*] [**match-all** *tcp-flag* | **established**]

User Datagram Protocol (UDP)

[sn] **deny udp** {*source-ipv6-prefix/prefix-length* | **host** *source-ipv6-address* | **any**} [*operator* **port** [*port*]] {*destination-ipv6-prefix /prefix-length* | **host** *destination-ipv6-address* | **any**}[*operator* **port** [*port*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragment**] [**range** *lower upper*] [**udf** *udf-id header pos value mask*] [**time-range** *time-range-name*]

Parameter Description

Parameter	Description
sn	ACL entry sequence number
deny	If not matched, access is denied.
source	Specify the source IP address (host address or network address).
source-wildcard	It can be discontinuous, for example, 0.255.0.32.
protocol	IP protocol number. It can be one of EIGRP, GRE, IPINIP, IGMP, NOS, OSPF, ICMP, UDP, TCP, and IP. It can also be a number representing the IP protocol between 0 and 255. The important protocols such as ICMP, TCP, and UDP are described separately.
destination	Specify the destination IP address (host address or network address).
destination-wildcard	Wildcard of the destination IP address. It can be discontinuous, for example, 0.255.0.32.
fragment	Packet fragment filtering
fragment-ipid *fragment-ipid*	Fragment ID of the header in segmented packet
precedence	Specify the packet priority.
precedence	Packet precedence value (0 to 7)
range	Layer4 port number range of the packet.
lower	Lower limit of the layer4 port number.
upper	Upper limit of the layer4 port number.
time-range	Time range of packet filtering
time-range-name	Time range name of packet filtering
tos	Specify type of service.
tos	ToS value (0 to 15)
icmp-type	ICMP message type (0 to 255)

icmp-code	ICMP message type code (0 to 255)
icmp-message	ICMP message type name
operator	Operator (lt-smaller, eq-equal, gt-greater, neq-unequal, range-range)
port [*port*]	Port number; range needs two port numbers, while other operators only need one port number.
host *source-mac-address*	Source physical address
host *destination-mac-address*	Destination physical address
VID *vid*	Match the specified VID.
ethernet-type	Ethernet type
match-all	Match all the bits of the TCP flag.
tcp-flag	Match the TCP flag.
established	Match the RST or ACK bits, not other bits of the TCP flag.
udf	Indicates the customized field.
udf-id	Indicates the ID of UDF. (Range:1 to 8)
header	Indicates the protocol layer.
pos	Indicates the offset. (Range:0 to 126)
value	Indicates the data (2 bytes).
mask	Indicates the mask (2 bytes).
int-flag	Matches the int header of the packets.
source-ipv6-prefix	Source IPv6 network address or network type
destination-ipv6-prefix	Destination IPv6 network address or network type
prefix-length	Prefix mask length
source-ipv6-address	Source IPv6 address
destination-ipv6-address	Destination IPv6 address
dscp	Differential Service Code Point
dscp	Code value, within the range of 0 to 63
ecn	Specifies the congestion notification type.
ecn	Specifies the congestion notification type value (0 to 3).
flow-label	Flow label
flow-label	Flow label value, within the range of 0 to 1048575.
protocol	For the IPv6, the field can be ipv6 | icmp | tcp | udp and number in the range 0 to 255
time-range	Time range of the packet filtering
time-range-name	Time range name of the packet filtering
mpls	Matches the IP field of MPLS packets.
vxlan	Matches the quintet of the VXLAN packets.
tagged	Matches the tagged VXLAN packets.
udp-dport	Matches the UDP port ID of the VXLAN packets.
dport	UDP port ID.

Defaults No entry

Command mode ACL configuration mode.

Usage Guide Use this command to configure the filtering entry of ACLs in ACL configuration mode.

Configuration Examples The following example shows how to create and display an extended expert ACL. This expert ACL denies all the TCP packets with the source IP address 192.168.4.12 and the source MAC address 001300498272.

```
Ruijie(config)#expert access-list extended 2702
Ruijie(config-exp-nacl)#deny tcp  host
192.168.4.12 host 0013.0049.8272 any any
Ruijie(config-exp-nacl)#permit any any any any
Ruijie(config-exp-nacl)#show access-lists
expert access-list extended 2702
10 deny tcp  host  192.168.4.12 host 0013.0049.8272 any any
20 permit any any any any
Ruijie(config-exp-nacl)#
```

This example shows how to use the extended IP ACL. The purpose is to deny the host with the IP address 192.168.4.12 to provide services through the TCP port 100 and apply the ACL to Interface gigabitethernet 1/1. The configuration procedure is as below:

```
Ruijie(config)# ip access-list extended ip-ext-acl
Ruijie(config-ext-nacl)# deny tcp host 192.168.4.12 eq 100 any
Ruijie(config-ext-nacl)# show access-lists
ip access-list extended ip-ext-acl
10 deny tcp host 192.168.4.12 eq 100 any
Ruijie(config-ext-nacl)#exit
Ruijie(config)#interface gigabitethernet 1/1
Ruijie(config-if)#ip access-group ip-ext-acl in
Ruijie(config-if)#
```

This example shows how to use the extended MAC ACL. The purpose is to deny the host with the MAC address 0013.0049.8272 to send Ethernet frames of the type 100 and apply the rule to Interface gigabitethernet 1/1. The configuration procedure is as below:

```
Ruijie(config)#mac access-list extended mac1
Ruijie(config-mac-nacl)#deny host 0013.0049.8272 any aarp
Ruijie(config-mac-nacl)# show access-lists
mac access-list extended mac1
10 deny host 0013.0049.8272 any aarp
Ruijie(config-mac-nacl)#exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mac access-group mac1 in
```

This example shows how to use the standard IP ACL. The purpose is to deny the host with the IP address 192.168.4.12 and apply the rule to Interface gigabitethernet 1/1. The configuration procedure is as below:

```
Ruijie(config)#ip access-list standard 34
```

```
Ruijie(config-ext-nacl)# deny host 192.168.4.12
Ruijie(config-ext-nacl)#show access-lists
ip access-list standard 34
10 deny host 192.168.4.12
Ruijie(config-ext-nacl)#exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ip access-group 34 in
```

This example shows how to use the extended IPV6 ACL. The purpose is to deny the host with the IP address 192.168.4.12 and apply the rule to Interface gigabitethernet 1/1. The configuration procedure is as below:

```
Ruijie(config)#ipv6 access-list extended v6-acl
Ruijie(config-ipv6-nacl)#11 deny ipv6 host 192.168.4.12 any
Ruijie(config-ipv6-nacl)#show access-lists
ipv6 access-list extended v6-acl
11 deny ipv6 host 192.168.4.12 any
Ruijie(config-ipv6-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ipv6 traffic-filter v6-acl in
```

Related Commands

Command	Description
show access-lists	Displays all ACLs.
ipv6 traffic-filter	Applies the extended IPv6 ACL on the interface.
ip access-group	Applies the IP ACL on the interface.
mac access-group	Applies the extended MAC ACL on the interface.
ip access-list	Defines an IP ACL.
mac access-list	Defines an extended MAC ACL.
expert access-list	Defines an extended expert ACL.
ipv6 access-list	Defines an extended IPv6 ACL.
permit	Permits the access.

Platform Description N/A

1.8 expert access-group

Use this command to apply the specified expert access list on the specified interface or globally. Use the **no** form of the command to remove the application.

expert access-group { *id* | *name* } { **in** | **out** } [[**counter-only**] | [**forward-plane**]] [**priority**]

no expert access-group { *id* | *name* } { **in** | **out** }[**counter-only**] [[**counter-only**] | [**forward-plane**]] [**priority**]

Parameter Description

Parameter	Description
id	Expert access list number: 2700 to 2899
name	Name of the expert access list
in	Specifies filtering on inbound packets.
out	Specifies filtering on outbound packets.
counter-only	Specifies the ACL dedicated for packet statistics on an interface.
forward-plane	Specifies the ACL dedicated for the forwarding plane
priority	Sets a higher priority for the interface configured with an SVI interface (only configured on the SVI interface and effective on the forwarding plane).

Defaults No expert access list is applied on the interface or globally.

Command mode Interface configuration mode, global configuration mode.

Usage Guide This command is used to apply the specified access list on the interface or globally to control the input and output data streams on the interface or globally. Use the **show access-group** command to view the setting.

Configuration Examples The following example shows how to apply the **access-list *accept*_**00d0f8xxxxxx only to Gigabit interface 0/1:

```
Ruijie(config)# interface GigaEthernet 0/1
Ruijie(config-if)# expert access-group
accept_00d0f8xxxxxx_only in
```

The following example applies the ACL numbered 2700 on interface fastEthernet0/1 to collect statistics on incoming packets:

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)#expert access-group 2700 in counter-only
```

The following example applies the ACL numbered 2700 on interface fastEthernet0/1 to the forwarding plane:

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)#expert access-group 2700 in forward-plane
```

Related Commands

Command	Description
show access-group	Displays the ACL configuration.

Platform Description N/A

1.9 expert access-list advanced

Use this command to create an advanced expert access list and place the device in expert advanced access list configuration mode. Use the **no** form of this command to remove the advanced expert access list.

expert access-list advanced *name*

no expert access-list advanced *name*

Parameter Description

Parameter	Description
name	Name of the advanced expert access list

Defaults None

Command mode Global configuration mode

Usage Guide Use this command to create an advanced expert access list (namely, ACL80) to match your custom fields.

Configuration Examples The following example creates an advanced expert access list named adv-acl.

```
Ruijie(config)# expert access-list advanced adv-acl
Ruijie(config-exp-dacl)# show access-lists
expert access-list advanced adv-acl
```

Related Commands

Command	Description
show access-lists	Displays all access lists.
show access-lists *name*	Displays the access list of a specified name.

Platform Description N/A

1.10 expert access-list extended

Use this command to create an extended expert access list. Use the **no** form of the command to remove the ACL.

expert access-list extended {*id* | *name*}

no expert access-list extended {*id* | *name*}

Parameter Description

Parameter	Description

id	Extended expert access list number: 2700 to 2899
name	Name of the extended expert access list

Defaults None

Command mode Global configuration mode.

Usage Guide Use the **show access-lists** command to display the ACL configurations**.**

Configuration Examples Create an extended expert ACL named exp-acl:

```
Ruijie(config)# expert access-list extended exp-acl
Ruijie(config-exp-nacl)# show access-lists expert access-list extended
exp-acl
Ruijie(config-exp-nacl)#
```

Create an extended expert ACL numbered 2704:

```
Ruijie(config)# expert access-list extended 2704
Ruijie(config-exp-nacl)# show access-lists  access-list extended 2704
Ruijie(config-exp-nacl)#
```

Related Commands

Command	Description
show access-lists	Displays the extended expert ACLs

Platform Description N/A

1.11 expert access-list counter

Use this command to enable the counter of packets matching the specified expert access list. Use the **no** form of this command to disable this function.

expert access-list counter { *id* | *name* }

no expert access-list counter { *id* | *name* }

Parameter Description

Parameter	Description
id	Expert access list number: 2700 to 2899.
name	Name of the access list.

Defaults The counter of the packets matching the expert access list is disabled.

Command mode Global configuration mode

Usage Guide Use this command to enable the counter of packets matching the specified expert access list, so that

you can analyze the counters to learn whether the network is attacked by the illegal packets.

Configuration Examples

The following example enables the counter of packets matching the extended expert access list named exp-acl:

```
Ruijie(config)# expert access-list counter exp-acl
Ruijie(config)# show access-lists
expert access-list extended exp-acl
 10 permit ip VID 4 host 192.168.3.55 any host 192.168.99.6 any (16 matches)
 20 deny tcp any any eq login any any (78 matches)
```

The following example disables the counter of packets matching the extended expert access list named exp-acl.

```
Ruijie(config)#no expert access-list counter exp-acl
Ruijie(config)# show access-lists
expert access-list extended 2700
 10 permit ip VID 4 host 192.168.3.55 any host 192.168.99.6 any
 20 deny tcp any any eq login any any
```

Related Commands

Command	Description
show access-lists	Displays the extended expert ACL.

Platform Description

N/A

1.12 expert access-list new-fragment-mode

Use this command to switch the matching mode of fragmentation packets. Use the **no** form of this command to restore the default matching mode of fragmentation packets.

expert access-list new-fragment-mode { *id* **|** *name* }

no expert access-list new-fragment-mode { *id* **|** *name* }

Parameter Description

Parameter	Description
id	Expert access list number: 2700 to 2899.
name	Name of the expert access list.

Defaults

Use the default matching mode of fragmentation packets. By default, if the access rule is tagged with fragment, it will match all packets except for the first fragmentation packet. If the access rule is not tagged with fragment, all packets including the first and all subsequent fragmentation packets will be matched.

Command mode

Global configuration mode

Usage Guide Use this command to switch and control the matching mode of access rules to fragmentation packets.

Configuration Examples The following example switches the matching mode of fragmentation packets for the ACL 2700 from the default mode to a new matching mode:

```
Ruijie(config)#expert access-list new-fragment-mode 2700
```

Related Commands

Command	Description
-	-

Platform Description N/A

1.13 expert access-list resequence

Use this command to resequence an expert access list. Use the **no** form of this command to restore the default order of access entries.

expert access-list resequence { *id* | *name* } *start-sn inc-sn*

no expert access-list resequence { *id* | *name* }

Parameter Description

Parameter	Description
Id	Expert access list number: 2700 to 2899.
name	Name of the expert access list
start-sn	Start sequence number. Range: 1 to 2147483647
inc-sn	Increment of the sequence number. Range: 1 to 2147483647

Defaults *start-sn*: 10

inc-sn: 10

Command mode Global configuration mode

Usage Guide Use this command to change the order of the access entries.

Configuration Examples The following example resequences entries of expert access list “exp-acl”:

Before the configuration:

```
Ruijie# show access-lists
expert access-list extended exp-acl
 10 permit ip any any any any
 20 deny ip any any any any
```

After the configuration:

```
Ruijie# config
Ruijie(config)# expert access-list resequence exp-acl 21 43
Ruijie(config)# exit
Ruijie# show access-lists
expert access-list extended exp-acl
 21 permit ip any any any any
 64 deny ip any any any any
```

Related Commands

Command	Description
show access-lists	Displays all access lists.

Platform Description N/A

1.14 global ip access-group

Use this command to apply the global access list on the interface. Use the **no** form of this command to remove the global access list from the interface.

global ip access-group

no global ip access-group

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, the global access list is applied on the interface.

Command mode Interface configuration mode

Usage Guide N/A

Configuration Examples The following example applies the global access list on interface fastEthernet0/0.

```
Ruijie(config)# interface fastEthernet 0/0
Ruijie(config-if-GigabitEthernet 0/0)#global ip access-group
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.15 ip access-group

Use this command to apply a specific access list to an interface or globally. Use the **no** form of this command to remove the access list from the interface.

ip access-group { *id* | *name* } { **in** | **out** }[**counter-only**] | [**forward-plane**] | [**priority**]

no ip access-group { *id* | *name* } { **in** | **out** }[**counter-only**] | [**forward-plane**] | [**priority**]

Parameter Description

Parameter	Description
id	IP access list or extended IP access list number: 1 to 199, 1300 to 2699
name	Name of the IP ACL
in	Filters the incoming packets of the interface.
out	Filters the outgoing packets of the interface.
reflect	Enables the reflexive ACL.
counter-only	Specifies the ACL dedicated for packet statistics on an interface.
forward-plane	Specifies the ACL dedicated for the forwarding plane
priority	Sets a higher priority for the interface configured with an SVI interface (only configured on the SVI interface and effective on the forwarding plane).

Defaults No access list is applied on the interface or globally by default.

Command mode Interface configuration mode, global configuration mode.

Usage Guide Use this command to control access to a specified interface or globally. Use the **expert access-group { *id* | *name* } { in | out } counter-only** command on the interface to only collect packet statistics and not filter packets.

Configuration Examples The following example applies the ACL 120 on interface fastEthernet0/0 to filter the incoming packets:

```
Ruijie(config)# interface fastEthernet 0/0
Ruijie(config-if-GigabitEthernetFastEthernet 0/0)#ip access-group 120 in
```

The following example applies the ACL numbered 120 on fastEthernet0/1 to collect statistics on incoming packets:

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)#ip access-group 120 in counter-only
```

The following example applies the ACL numbered 120 globally to filter packets on the forwarding plane:

```
Ruijie(config)# ip access-group 120 in forward-plane
```

Related Commands

Command	Description
show ip access-group	Displays all standard and extended IP ACL.
show ip access-group interface *interface-name*	Displays all standard and extended IP ACL on a specified interface.

Prompt

1: When an ACL is attached, if another ACL of the following type has been attached on the same direction of the interface, then an error message is displayed:
Standard IP ACL, Extended IP ACL, Extended MAC IP, Expert ACL
Another acl has attached at FastEthernet 0/2, Operation fail.

2: When an ACL is discarded, if the specified ACL is not attached on the specified direction of the interface, then an error message is displayed:
The acl has not attached at %s, Operation fail

1.16 ip access-list

Use this command to create a standard IP access list or extended IP access list. Use the **no** form of the command to remove the access list.
ip access-list {**extended** | **standard**} {*id* | *name*}
no ip access-list {**extended** | **standard**} {*id* | *name*}

Parameter Description

Parameter	Description
id	Access list number: Standard: 1 to 99, 1300 to 1999; Extended: 100 to 199, 2000 to 2699.
name	Name of the access list

Defaults None

Command mode Global configuration mode

Usage Guide Configure a standard access list if you need to filter on source address only. If you want to filter on anything other than source address, you need to create an extended access list.
Refer to **deny** or **permit** in the two modes. Use the **show access-lists** command to display the ACL configurations**.**

Configuration Examples The following example creates a standard access list named std-acl.

```
Ruijie(config)# ip access-list standard std-acl
Ruijie(config-std-nacl)# show access-lists
ip access-list standard std-acl
Ruijie(config-std-nacl)#
```

The following example creates an extended ACL numbered 123:

```
Ruijie(config)# ip access-list extended 123
Ruijie(config-ext-nacl)# show access-lists
ip access-list extended 123
```

Related Commands

Command	Description
show access-lists	Displays all ACLs.

Platform Description N/A

1.17 ip access-list log-update interval

Use this command to configure the interval at which the IPv4 access list log is updated. Use the **no** form of this command to restore the default interval.

ip access-list log-update interval *time*

no ip access-list log-update interval

Parameter Description

Parameter	Description
time	For the access rule with the **log** option, a packet hit is output at the interval of ACL logging output. The interval ranges from 0 to 1440 minutes, and the default value is 5 minutes, indicating that the ACL matching log of a specified flow is output every 5 minutes. 0 indicates that no ACL logging is output.

Defaults The default interval at which the IPv4 access list log is updated is 5 minutes.

Command mode Global configuration mode

Usage Guide Use this command to configure the interval at which the IPv4 access list log is updated.

Configuration Examples The following example configures the interval for the IPv4 access list log update to 10 minutes:

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# ip access-list log-update interval 10
```

Related Commands

Command	Description
ip access-list	Defines an IPv4 access list.
deny	Defines the **deny** access entries.

permit	Defines the **permit** access entries.
show running	Displays running configurations of the device.

Platform Description N/A

1.18 ip access-list counter

Use this command to enable the counter of packets matching the standard or extended IP access list.
Use the **no** form of this command to disable the counter.
ip access-list counter { *id* | *name* }
no ip access-list counter { *id* | *name* }

Parameter Description

Parameter	Description
id	IP access list number: Standard IP access list: 1 to 99, 1300 to 1999; Extended IP access list: 100 to 199, 2000 to 2699.
name	Name of the IP access list.

Defaults The counter of packets matching the standard or extended IP access list is disabled by default.

Command mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example enables the counter of packets matching the standard access list:

```
Ruijie(config)# ip access-list counter std-acl
Ruijie(config-std-nacl)# show access-lists
ip access-list standard std-acl
 10 permit 195.168.6.0 0.0.0.255 (999 matches)
 20 deny host 5.5.5.5 time-range tm (2000 matches)
```

The following example disables the counter of packets matching the standard access list:

```
Ruijie(config)#no ip access-list counter std-acl
Ruijie(config-std-nacl)# show access-lists
ip access-list standard std-acl
 10 permit 195.168.6.0 0.0.0.255
 20 deny host 5.5.5.5 time-range tm
```

Related Commands

Command	Description
show access-lists	Displays all access lists.

Platform Description N/A

1.19 ip access-list new-fragment-mode

Use this command to switch the matching mode of fragmentation packets of standard or extended IP access list. Use the **no** form of this command to restore the default matching mode of fragmentation packets.

ip access-list new-fragment-mode { *id* **|** *name* }

no ip access-list new-fragment-mode { *id* **|** *name* }

Parameter Description

Parameter	Description
id	IP access list number: Standard IP access list: 1 to 99, 1300 to 1999; Extended IP access list: 100 to 199, 2000 to 2699.
name	Name of the standard or extended IP access list

Defaults Use the default matching mode of fragmentation packets. By default, if the access rule is tagged with fragment, it will match all packets except for the first fragmentation packet. If the access rule is not tagged with fragment, all packets including the first and all subsequent fragmentation packets will be matched.

Command mode Global configuration mode

Usage Guide This command is used to switch and control the fragmentation packet matching mode of access rules.

Configuration Examples The following example switches the fragmentation packet matching mode of the ACL 100 from the default mode to a new mode:

```
Ruijie(config)#ip access-list new-fragment-mode 100
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.20 ip access-list resequence

Use this command to resequence a standard or extended IP access list. Use the **no** form of this command to restore the default order of access entries.

ip access-list resequence { *id* | *name* } *start-sn inc-sn*

no ip access-list resequence { *id* | *name* }

Parameter Description

Parameter	Description
id	IP access list number: Standard IP access list: 1 to 99, 1300 to 1999; Extended IP access list: 100 to 199, 2000 to 2699.
name	Name of the standard or extended IP access list
start-sn	Start sequence number. Range: 1 to 2147483647
inc-sn	Increment of the sequence number. Range: 1 to 2147483647

Defaults

start-sn: 10

inc-sn: 10

Command mode

Global configuration mode

Usage Guide

Use this command to change the order of the access entries.

Configuration Examples

The following example resequences entries of ACL1:

Before the configuration:

```
Ruijie# show access-lists
ip access-list standard 1
10 permit host 192.168.4.12
20 deny any any
```

After the configuration:

```
Ruijie# config
Ruijie(config)# ip access-list resequence 1 21 43
Ruijie(config)# exit
Ruijie# show access-lists
ip access-list standard 1
21 permit host 192.168.4.12
64 deny any any
```

Related Commands

Command	Description
show access-lists	Displays all access lists..

Platform Description N/A

1.21 ipv6 access-list

Use this command to create an IPv6 access list and to place the device in IPv6 access list configuration mode. Use the **no** form of this command to remove the access list.

ipv6 access-list *name*

no ipv6 access-list *name*

Parameter Description

Parameter	Description
name	Name of the IPv6 access list.

Defaults None

Command mode Global configuration mode

Usage Guide To filter the IPv6 packets through the access list, you need to define an IPv6 access list by using the **ipv6 access-list** command.

Configuration Examples The following example creates an IPv6 access list named v6-acl:

```
Ruijie(config)# ipv6 access-list v6-acl
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list extended v6-acl
Ruijie(config-ipv6-nacl)#
```

Related Commands

Command	Description
show access-lists	Displays all access lists.

Platform Description N/A

1.22 ipv6 access-list counter

Use this command to enable the counter of packets matching the IPv6 access list. Use the **no** form of this command to disable the counter.

ipv6 access-list counter *name*

no ipv6 access-list counter *name*

Parameter

Parameter	Description

Description

name	Name of the IPv6 access list.

Defaults -

Command mode Global configuration mode

Usage Guide Use this command to enable the counter of packets matching the IPv6 access list to monitor the IPv6 packets matching and filtering.

Configuration Examples The following example enables the counter of packets matching the IPv6 access list named v6-acl:

```
Ruijie(config)# ipv6 access-list v6-acl
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list acl-v6
 10 permit icmp any any (7 matches)
 20 deny tcp any any (7 matches)
```

The following example disables the counter of packets matching the IPv6 access list named v6-acl:

```
Ruijie(config)#no ipv6 access-list v6-acl counter
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list acl-v6
 10 permit icmp any any
20 deny tcp any any
```

Related Commands

Command	Description
show access-lists	Displays all access lists.

Platform Description N/A

1.23 ipv6 access-list log-update interval

Use this command to configure the interval at which the IPv6 access list log is updated. Use the **no** form of this command to restore the default interval.

ipv6 access-list log-update interval *time*

no ipv6 access-list log-update interval

Parameter Description

Parameter	Description
time	For the access rule with the **logging** option, a packet hit is output at the interval of ACL logging output. The interval ranges from 0 to 1440 minutes, and the default value is 5 minutes, indicating that the ACL

	matching log of a specific flow is output every 5 minutes. 0 indicates that no ACL logging is output.

Defaults N/A

Command mode Global configuration mode

Usage Guide Use this command to configure the interval at which the IPv6 access list log is updated.

Configuration Examples The following example configures the interval for the IPv6 access list log update to 10 minutes:

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# ipv6 access-list log-update interval 9
```

Related Commands

Command	Description
ipv6 access-list	Defines an IPv6 access list.
deny	Defines the **deny** access entries.
permit	Defines the **permit** access entries.
show running	Displays the running configurations of the device.

Platform Description N/A

1.24 ipv6 access-list resequence

Use this command to resequence an IPv6 access list. Use the **no** form of this command to restore the default order of access entries.

ipv6 access-list resequence *name start-sn inc-sn*

no ipv6 access-list resequence *name*

Parameter Description

Parameter	Description
name	Name of the IPv6 access list
start-sn	Start sequence number. Range: 1 to 2147483647
inc-sn	Increment of the sequence number. Range: 1 to 2147483647

Defaults *start-sn*: 10

inc-sn: 10

Command Global configuration mode

mode

Usage Guide Use this command to change the order of the access entries.

Configuration Examples The following example resequences entries of IPv6 access list “v6-acl”:

Before the configuration:

```
Ruijie# show access-lists
ipv6 access-list v6-acl
 10 permit ipv6 any any
 20 deny ipv6 any any
```

After the configuration:

```
Ruijie# config
Ruijie(config)# ipv6 access-list resequence v6-acl 21 43
Ruijie(config)# exit
Ruijie# show access-lists
ipv6 access-list v6-acl
 21 permit ipv6 any any
 64 deny ipv6 any any
```

Related Commands

Command	Description
show access-lists	Displays all access lists..

Platform Description N/A

1.25 ipv6 traffic-filter

Use this command to apply an IPV6 access list on the specified interface or globally. Use the **no** form of the command to remove the IPv6 access list from the interface.

ipv6 traffic-filter *name* { **in** | **out** } [[**counter-only**] | [**forward-plane**]] [**priority**]

no ipv6 traffic-filter *name* { **in** | **out** } [[**counter-only**] | [**forward-plane**]] [**priority**]

Parameter Description

Parameter	Description
name	Name of IPv6 access list
in	Specifies filtering on inbound packets
out	Specifies filtering on outbound packets
forward-plane	Specifies the ACL dedicated for the forwarding plane
counter-only	Specifies the ACL dedicated for packet statistics on an interface.
priority	Sets a higher priority for the interface configured with an SVI interface (only configured on the SVI interface and effective on the forwarding plane).

Defaults None

Command mode Global/Interface configuration mode.

Usage Guide Use this command to apply the IPv6 access list to a specified interface or globally to filter the inbound or outbound packets.

Configuration Examples The following example applies the IPv6 access list named **v6-acl** to interface GigabitEthernet 0/1:

```
Ruijie(config)# interface GigaEthernet 0/1
Ruijie(config-if)# ipv6 traffic-filter v6-acl in
```

The following example applies the ACL named access-list v6-acl globally:

```
Ruijie(config)# ipv6 traffic-filter v6-acl in
```

The following example applies IPv6 ACL named v6-acl on fastEthernet0/1 to filter incoming packets on the forwarding plane:

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# ipv6 traffic-filter v6-acl in forward-plane
```

Related Commands

Command	Description
show access-group	Displays ACL configurations on the interface.

Platform Description N/A

1.26 list-remark

Use this command to write a helpful comment (remark) for an access list. Use the **no** form of this command to remove the remark.

list-remark *text*

no list-remark

Parameter Description

Parameter	Description
text	Comment that describes the access list.

Defaults The access lists have no remarks by default.

Command mode ACL configuration mode

Usage Guide You can use this command to write a helpful comment for a specified access list.

Configuration Examples The following example writes a comment of “this acl is to filter the host 192.168.4.12” for ACL102.

```
Ruijie(config)# ip access-list extended 102
Ruijie(config-ext-nacl)# list-remark this acl is to filter the host
192.168.4.12
Ruijie(config-ext-nacl)# show access-lists
ip access-list extended 102
deny ip host 192.168.4.12 any
1000 hits
this acl is to filter the host 192.168.4.12
Ruijie(config-ext-nacl)#
```

Related Commands

Command	Description
show access-lists	Displays all access lists.
ip access-list	Defines an IPv4 access list.
access-list list remark	Adds a helpful comment for an access list in global configuration mode.

Platform Description N/A

1.27 mac access-group

Use this command to apply the specified MAC access list on the specified interface or globally. Use the **no** form of the command to remove the access list from the interface.

mac access-group { *id* | *name* } { **in** | **out** } [[**counter-only**] | [**forward-plane**]] [**priority**]

no mac access-group { *id* | *name* } { **in** | **out** } [[**counter-only**] | [**forward-plane**]] [**priority**]

Parameter Description

Parameter	Description
id	MAC access list number. The range is from 700 to 799.
name	Name of the MAC access list
in	Specifies filtering on the inbound packets.
out	Specifies filtering on the outbound packets.
forward-plane	Specifies the ACL dedicated for the forwarding plane
counter-only	Specifies the ACL dedicated for packet statistics on an interface.
priority	Sets a higher priority for the interface configured with an SVI interface (only configured on the SVI interface and effective on the forwarding plane).

Defaults None

Command mode Interface configuration mode , global configuration mode.

Usage Guide Use this command to apply the access list to the interface or globally to filter the inbound or outbound packets based on the MAC address. Use the **mac access-group { *id* | *name* } { in | out } counter-only** command on the interface to only collect packet statistics and not filter packets.

Configuration Examples The following example applies the MAC access-list **accept_00d0f8xxxxxx_only** to interface GigabitEthernet 1/1:

```
Ruijie(config)# interface GigaEthernet 1/1
Ruijie(config-if-GigabitEthernet 1/1)# mac access-group
accept_00d0f8xxxxxx_only in
```

The following example applies the ACL numbered 700 on fastEthernet0/1 to collect statistics on incoming packets:

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)#mac access-group 700 in counter-only
```

The following example applies the ACL numbered 700 on fastEthernet0/1 to filter packets on the forwarding plane:

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)#mac access-group 700 in forward-plane
```

Related Commands

Command	Description
show access-group	Displays the ACL configuration on the interface.

Platform Description N/A

1.28 mac access-list extended

Use this command to create an extended MAC access list. Use the **no** form of the command to remove the MAC access list.

mac access-list extended { *id* | *name* }

no mac access-list extended { *id* | *name* }

Parameter Description

Parameter	Description
id	Extended MAC access list number. The range is from 700 to 799.
name	Name of the extended MAC access list

Defaults None

Command Global configuration mode.

mode

Usage Guide To filter the packets based on the MAC address, you need to define a MAC access list by using the **mac access-list extended** command.

Configuration Examples The following command creates an extended MAC access list named mac-acl:

```
Ruijie(config)# mac access-list extended mac-acl
Ruijie(config-mac-nacl)# show access-lists mac access-list extended mac-acl
```

The following command creates an extended MAC access list numbered 704:

```
Ruijie(config)# mac access-list extended 704
Ruijie(config-mac-nacl)# show access-lists mac access-list extended 704
```

Related Commands

Command	Description
show access-lists	Displays all access lists.

Platform Description N/A

1.29 mac access-list counter

Use this command to enable the counter of packet matching the extended MAC access list. Use the **no** form of this command to disable the counter.

mac access-list counter { *id* | *name* }

no mac access-list counter { *id* | *name* }

Parameter Description

Parameter	Description
id	Extended MAC access list number. The range is from 700 to 799.
name	Name of the extended MAC access list

Defaults The counter is disabled by default.

Command mode Global configuration mode

Usage Guide Use this command to enable the counter of packets matching the MAC access list to monitor the packets matching and filtering.

Configuration Examples The following example enables the counter of packet matching the extended MAC access list named mac-acl:

```
Ruijie(config)# mac access-list counter mac-acl
Ruijie(config)# show access-lists
mac access-list extended mac-acl
 10 permit host 0023.56ac.8965 any (170 matches)
```

```
20 deny any any etype-any cos 6 (239 matches)
```

The following example disables the counter of packet matching the extended MAC access list named mac-acl:

```
Ruijie(config)#no mac access-list counter mac-acl
Ruijie(config)# show access-lists
mac access-list extended mac-acl
 10 permit host 0023.56ac.8965 any
 20 deny any any etype-any cos 6
```

Related Commands

Command	Description
show access-lists	Displays all access lists.

Platform Description N/A

1.30 mac access-list resequence

Use this command to resequence an extended MAC access list. Use the **no** form of this command to restore the default order of access entries.

mac access-list resequence { *id* | *name* } *start-sn inc-sn*

no mac access-list resequence { *id* | *name* }

Parameter Description

Parameter	Description
id	Extended MAC access list number: 700 to 799.
name	Name of the extended MAC access list
start-sn	Start sequence number. Range: 1 to 2147483647
inc-sn	Increment of the sequence number. Range: 1 to 2147483647

Defaults *start-sn*: 10

inc-sn: 10

Command mode Global configuration mode

Usage Guide Use this command to change the order of the access entries.

Configuration Examples The following example resequences entries of extended MAC access list “mac-acl”:

Before the configuration:

```
Ruijie# show access-lists
mac access-list extended mac-acl
 10 permit any any etype-any
```

```
20 deny any any etype-any
```

After the configuration:

```
Ruijie# config
Ruijie(config)# mac access-list resequence exp-acl 21 43
Ruijie(config)# exit
Ruijie# show access-lists
mac access-list extended mac-acl
 21 permit any any etype-any
 64 deny any any etype-any
```

Related Commands

Command	Description
show access-lists	Displays all access lists..

Platform Description N/A

1.31 permit

One or multiple **permit** conditions are used to determine whether to forward or discard the packet. In ACL configuration mode, you can modify the existent ACL or configure according to the protocol details.

1. Standard IP ACL

[*sn*] **permit** {*source source-wildcard* | **host** *source* | **any | interface** *idx* } [**time-range** *tm-range-name*] [**log**]

2. Extended IP ACL

[*sn*] **permit protocol** *source source-wildcard destination destination-wildcard* [[**precedence** *precedence*] [**tos** *tos*] | [**dscp** *dscp*] [**ecn** *ecn*]] [**fragment**] [**fragment-ipid** *fragment-ipid*] [**range** *lower upper*] [**udf** *udf-id header pos value mask*] [**time-range** *time-range-name*] [**log**]

Extended IP ACLs of some important protocols:

Internet Control Message Protocol (ICMP)

[*sn*] **permit icmp** { *source source-wildcard* | **host** *source* | **any** } { *destination destination-wildcard* | **host** *destination* | **any** } [*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [[**precedence** *precedence*] [**tos** *tos*] | [**dscp** *dscp*] [**ecn** *ecn*]] [**fragment**] [**fragment-ipid** *fragment-ipid*] [**udf** *udf-id header pos value mask*] [**time-range** *time-range-name*]

Transmission Control Protocol (TCP)

[*sn*] **permit tcp** { *source source-wildcard* | **host** *Source* | **any** } [*operator* **port** [*port*]] { *destination destination-wildcard* | **host** *destination* | **any** } [*operator* **port** [*port*]] [[**precedence** *precedence*] [**tos** *tos*] | [**dscp** *dscp*] [**ecn** *ecn*]] [**fragment**] [**fragment-ipid** *fragment-ipid*] [**range** *lower upper*] [**udf** *udf-id header pos value mask*] [**time-range** *time-range-name*] [**match-all** *tcp-flag* | **established**]

User Datagram Protocol (UDP)

[*sn*] **permit udp** { *source source –wildcard* | **host** *source* | **any** } [*operator* **port** [*port*]] { *destination destination-wildcard* | **host** *destination* | **any** } [**operator port** [*port*]] [[**precedence** *precedence*] [**tos** *tos*] | [**dscp** *dscp*] [**ecn** *ecn*]] [**fragment**] [**fragment-ipid** *fragment-ipid*] [**range** *lower upper*] [**udf**

udf-id header pos value mask] [**time-range** *time-range-name*]

3. Extended MAC ACL

[*sn*] **permit** { **any** | **host** *source-mac-address* | *source-mac-address mask*} { **any** | **host** *destination-mac-address* | *destination -mac-address mask* } [*ethernet-type*] [**cos** [*out*] [**inner** *in*]]

4. Extended expert ACL

[*sn*] **permit** [**protocol** | [*ethernet-type*] [**cos** [*out*] [**inner** *in*]]] **[VID [** *out* **] [inner** *in* **]] {** *source source-wildcard* **| host** *source* **| any** } **{ host** *source*-mac-*address* | **any** } { *destination destination-wildcard* | **host** *destination* | **any** } { **host** *destination-mac-address* | **any** } [[**precedence** *precedence*] [**tos** *tos*] | [**dscp** *dscp*] [**ecn** *ecn*]] [**fragment**] [**fragment-ipid** *fragment-ipid*] [**range** *lower upper*] [[**udf** *udf-id header pos value mask*] | [int-flag-a] [int-flag-b]] [**time-range** *time-range-name*]

When you select the Ethernet-type field or cos field:

[*sn*] **permit** {*ethernet-type*| **cos** [*out*] [**inner** *in*]} [**VID** [*out*][**inner** *in*]] {*source source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any** } {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**udf** *udf-id header pos value mask*] [**time-range** *time-range-name*]

When you select the protocol field:

[*sn*] **permit protocol** [**VID** [*out][***inner** *in*]] {*source source-wildcard* | **host** *Source* | **any**} {**host** *source-mac-address* | **any** } {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [[**precedence** *precedence*] [**tos** *tos*] | [**dscp** *dscp*] [**ecn** *ecn*]] [**fragment**] [**range** *lower upper*] [[**udf** *udf-id header pos value mask*] | [int-flag-a] [int-flag-b]] [**time-range** *time-range-name*]

Extended expert ACLs of some important protocols:

Internet Control Message Protocol (ICMP)

[*sn*] **permit icmp** [**VID [** *out* **] [inner** *in* **]]** { *source source-wildcard* | **host** *source* | **any** } { **host** *source-mac-address* | **any** } { *destination destination-wildcard* | **host** *destination* | **any** } { **host** *destination-mac-address* | **any** } [*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [[**precedence** *precedence*] [**tos** *tos*] | [**dscp** *dscp*] [**ecn** *ecn*]] [**fragment**] [**fragment-ipid** *fragment-ipid*] [**udf** *udf-id header pos value mask*] [**time-range** *time-range-name*]

Transmission Control Protocol (TCP)

[*sn*] **permit tcp** [**VID [** *out* **] [inner** *in* **]] {** *source source-wildcard* | **host** *Source* | **any** } { **host** *source-mac-address* | **any** } [*operator* **port** [*port*]] { *destination destination-wildcard* | **host** *destination* | **any** } { **host** *destination-mac-address* | **any** } [*operator* **port** [*port*]] [[**precedence** *precedence*] [**tos** *tos*] | [**dscp** *dscp*] [**ecn** *ecn*]] [**fragment**] [**fragment-ipid** *fragment-ipid*] [**range** *lower upper*] [[**udf** *udf-id header pos value mask*] | [int-flag-a] [int-flag-b]] [**time-range** *time-range-name*] [**match-all** *tcp-flag* | **established**]

User Datagram Protocol (UDP)

[*sn*] **permit udp** [**VID [** *out* **] [inner** *in* **]]** { *source source –wildcard* | **host** *source* | **any** } { **host** *source-mac-address* | **any** } [*operator* **port** [*port*]] { *destination destination-wildcard* | **host** *destination* | **any** } { **host** *destination-mac-address* | **any** } [*operator* **port** [*port*]] [[**precedence** *precedence*] [**tos** *tos*] | [**dscp** *dscp*] [**ecn** *ecn*]]] [**fragment**] [**fragment-ipid** *fragment-ipid*] [**range** *lower upper*] [[**udf** *udf-id header pos value mask*] | [int-flag-a] [int-flag-b]] [**time-range** *time-range-name*]

Address Resolution Protocol (ARP)

[*sn*] **permit arp** {**vid** *vlan-id***}** [**host** *source-mac-address* | **any**] [**host** *destination –mac-address* | **any**]

{*sender-ip sender-ip–wildcard* | **host** *sender-ip* | **any**} {*sender-mac sender-mac-wildcard* | **host** *sender-mac* | **any**} {*target-ip target-ip–wildcard* | **host** *target-ip* | **any**} [**udf** *udf-id header pos value mask*]

Virtual Extensible LAN(VXLAN):

access-list *id* { **deny** | **permit** } **vxlan** {**tcp** | **udp}** { *source source –wildcard* | **host** *source* | **any** } [**eq** *port*] { *destination destination-wildcard* | **host** *destination* | **any** } [**eq** *port*] [**tagged**] [**udp-dport** *dport*] [**time-range** *time-range-name*]

5. Extended IPv6 ACL

[*sn*] **permit protocol** {*source-ipv6-prefix* / *prefix-length* | **any** | **host** *source-ipv6-address*} {*destination-ipv6-prefix* / *prefix-length* | **any**| *hostdestination-ipv6-address*} [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragment**] [**range** *lower upper*] [**udf** *udf-id header pos value mask*] [**time-range** *time-range-name*]

Extended IPv6 ACLs of some important protocols:

Internet Control Message Protocol (ICMP)

[*sn*] **permit icmp** {*source-ipv6-prefix* / *prefix-length* | **any** *source-ipv6-address* | **host**} {*destination-ipv6-prefix* / *prefix-length*| **host** *destination-ipv6-address* | **any**} [*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**dscp** *dscp*] [**flow-label** *flow-label*][**fragment**] [**udf** *udf-id header pos value mask*] [**time-range** *time-range-name*]

Transmission Control Protocol (TCP)

[*sn*] **permit tcp** {*source-ipv6-prefix* / *prefix-length* | **host** *source-ipv6-address* | **any**} [*operator* **port** [*port*]] {*destination-ipv6-prefix* / *prefix-length* | **host** *destination-ipv6-address* | **any**} [*operator* **port** [*port*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragment**] [**range** *lower upper*] [**udf** *udf-id header pos value mask*] [**time-range** *time-range-name*] [**match-all** *tcp-flag* | **established**]

User Datagram Protocol (UDP)

[*sn*] **permit udp** {*source-ipv6-prefix* / *prefix-length* | **host** *source-ipv6-address* | **any**} [*operator* **port** [*port*]] {*destination-ipv6-prefix* / *prefix-length* | **host** *destination-ipv6-address* | **any**} [*operator* **port** [*port*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragment**] [**range** *lower upper*] [**udf** *udf-id header pos value mask*] [**time-range** *time-range-name*]

Parameter Description

Parameter	Description
N/A	N/A
sn	ACL entry sequence number
deny	If not matched, access is denied.
source	Specify the source IP address (host address or network address).
source-wildcard	It can be discontinuous, for example, 0.255.0.32.
protocol	IP protocol number. It can be one of EIGRP, GRE, IPINIP, IGMP, NOS, OSPF, ICMP, UDP, TCP, and IP. It can also be a number representing the IP protocol between 0 and 255. The important protocols such as ICMP, TCP, and UDP are described separately.
destination	Specify the destination IP address (host address or network address).
destination-wildcard	Wildcard of the destination IP address. It can be discontinuous, for

	example, 0.255.0.32.
fragment	Packet fragment filtering
fragment-ipid *fragment-ipid*	Fragment ID of the header in segmented packet
precedence	Specify the packet priority.
precedence	Packet precedence value (0 to 7)
range	Layer4 port number range of the packet.
lower	Lower limit of the layer4 port number.
upper	Upper limit of the layer4 port number.
time-range	Time range of packet filtering
time-range-name	Time range name of packet filtering
tos	Specify type of service.
tos	ToS value (0 to 15)
icmp-type	ICMP message type (0 to 255)
icmp-code	ICMP message type code (0 to 255)
icmp-message	ICMP message type name
operator	Operator (lt-smaller, eq-equal, gt-greater, neq-unequal, range-range)
port [port]	Port number; range needs two port numbers, while other operators only need one port number.
host source-mac-address	Source physical address
host destination-mac-address	Destination physical address
VID vid	Match the specified VID.
ethernet-type	Ethernet type
match-all	Match all the bits of the TCP flag.
tcp-flag	Match the TCP flag.
established	Match the RST or ACK bits, not other bits of the TCP flag.
udf	Indicates the customized field.
udf-id	Indicates the ID of UDF. (Range:1 to 8)
header	Indicates the protocol layer.
pos	Indicates the offset. (Range:0 to 126)
value	Indicates the data (2 bytes).
mask	Indicates the mask (2 bytes).
int-flag	Matches the int header of the packets.
source-ipv6-prefix	Source IPv6 network address or network type
destination-ipv6-prefix	Destination IPv6 network address or network type
prefix-length	Prefix mask length
source-ipv6-address	Source IPv6 address
destination-ipv6-address	Destination IPv6 address
dscp	Differential Service Code Point
dscp	Code value, within the range of 0 to 63
ecn	Specifies the congestion notification type.
ecn	Specifies the congestion notification type value (0 to 3).
flow-label	Flow label
flow-label	Flow label value, within the range of 0 to 1048575.

protocol	For the IPv6, the field can be ipv6 | icmp | tcp | udp and number in the range 0 to 255
time-range	Time range of the packet filtering
time-range-name	Time range name of the packet filtering
mpls	Matches the IP field of MPLS packets.
vxlan	Matches the quintet of the VXLAN packets.
tagged	Matches the tagged VXLAN packets.
udp-dport	Matches the UDP port ID of the VXLAN packets.
dport	UDP port ID.

Defaults No entry

Command mode ACL configuration mode.

Usage Guide Use this command to configure the filtering entry of ACLs in ACL configuration mode.

Configuration Examples The following example shows how to create and display an extended expert ACL. This expert ACL denies all the TCP packets with the source IP address 192.168.4.12 and the source MAC address 001300498272.

```
Ruijie(config)#expert access-list extended 2702
Ruijie(config-exp-nacl)#deny tcp  host
192.168.4.12 host 0013.0049.8272 any any
Ruijie(config-exp-nacl)#permit any any any any
Ruijie(config-exp-nacl)#show access-lists
expert access-list extended 2702
10 deny tcp  host  192.168.4.12 host 0013.0049.8272 any any
20 permit any any any any
Ruijie(config-exp-nacl)#
```

This example shows how to use the extended IP ACL. The purpose is to deny the host with the IP address 192.168.4.12 to provide services through the TCP port 100 and apply the ACL to Interface gigabitethernet 1/1. The configuration procedure is as below:

```
Ruijie(config)# ip access-list extended ip-ext-acl
Ruijie(config-ext-nacl)# deny tcp host 192.168.4.12 eq 100 any
Ruijie(config-ext-nacl)# show access-lists
ip access-list extended ip-ext-acl
10 deny tcp host 192.168.4.12 eq 100 any
Ruijie(config-ext-nacl)#exit
Ruijie(config)#interface gigabitethernet 1/1
Ruijie(config-if)#ip access-group ip-ext-acl in
Ruijie(config-if)#
```

This example shows how to use the extended MAC ACL. The purpose is to deny the host with the MAC address 0013.0049.8272 to send Ethernet frames of the type 100 and apply the rule to Interface gigabitethernet 1/1. The configuration procedure is as below:

```
Ruijie(config)#mac access-list extended mac1
Ruijie(config-mac-nacl)#deny host 0013.0049.8272 any aarp
Ruijie(config-mac-nacl)# show access-lists
mac access-list extended mac1
10 deny host 0013.0049.8272 any aarp
Ruijie(config-mac-nacl)#exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mac access-group mac1 in
```

This example shows how to use the standard IP ACL. The purpose is to deny the host with the IP address 192.168.4.12 and apply the rule to Interface gigabitethernet 1/1. The configuration procedure is as below:

```
Ruijie(config)#ip access-list standard 34
Ruijie(config-ext-nacl)# deny host 192.168.4.12
Ruijie(config-ext-nacl)#show access-lists
ip access-list standard 34
10 deny host 192.168.4.12
Ruijie(config-ext-nacl)#exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ip access-group 34 in
```

This example shows how to use the extended IPV6 ACL. The purpose is to deny the host with the IP address 192.168.4.12 and apply the rule to Interface gigabitethernet 1/1. The configuration procedure is as below:

```
Ruijie(config)#ipv6 access-list extended v6-acl
Ruijie(config-ipv6-nacl)#11 deny ipv6 host 192.168.4.12 any
Ruijie(config-ipv6-nacl)#show access-lists
ipv6 access-list extended v6-acl
11 deny ipv6 host 192.168.4.12 any
Ruijie(config-ipv6-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ipv6 traffic-filter v6-acl in
```

Related Commands

Command	Description
show access-lists	Displays all ACLs.
ipv6 traffic-filter	Applies the extended IPv6 ACL on the interface.
ip access-group	Applies the IP ACL on the interface.
mac access-group	Applies the extended MAC ACL on the interface.
ip access-list	Defines an IP ACL.
mac access-list	Defines an extended MAC ACL.
expert access-list	Defines an extended expert ACL.
ipv6 access-list	Defines an extended IPv6 ACL.
permit	Permits the access.

Platform Description

N/A

1.32 redirect destination interface

Use this command to redirect the traffic matching the access list to the specified interface. Use the **no** form of this command to remove the redirection.

redirect destination interface *interface-name* **acl** { *id* | *name* } **in**

no redirect destination interface *interface-name* **acl** { *id* | *name* } **in**

Parameter Description

Parameter	Description
interface-name	Redirect interface
id	Access list number
name	Access list name

Defaults No redirection is configured.

Command mode Interface configuration mode

Usage Guide Use this command to configure access redirection, namely, to redirect the traffic matching the access list to the specified interface. You can monitor the operation of a specified access list by using this command.

Configuration Examples The following example configures access redirection.

```
Ruijie(config)# interface gigabitEthernet 0/3
Ruijie(config-if-GigabitEthernet 0/3)# redirect destination interface
gigabitEthernet 0/2 acl1 in
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.33 remark

Use this command to write a helpful comment (remark) for an entry in the access list. Use the **no** form of this command to remove the remark.

[*sn*] **remark** *text*

no [*sn*] **remark**

Parameter

Parameter	Description

Description

text	Comment that describes the access entry.
sn	Indicates the sequence number of an ACE comment.

Defaults The access entries have no remarks.

Command mode ACL configuration mode.

Usage Guide Use this command to write a helpful comment for an access entry.
Up to 100 characters are allowed in the remark.
Two identical access entry remarks in one access list are not allowed.
Removing an access entry may delete the remark for it as well.
If the sn is specified, the comment will match a specified ACE; if no, the comment will match the last ACE in the ACL.

Configuration Examples The following example writes remarks for the entry in extended IP access list 102.

```
Ruijie(config)# ip access-list extended 102
Ruijie(config-ext-nacl)# remark first_remark
Ruijie(config-ext-nacl)# 10 permit tcp 1.1.1.1 0.0.0.0 2.2.2.2 0.0.0.0
Ruijie(config-ext-nacl)# 10 remark second_remark
Ruijie(config-ext-nacl)# permit tcp 3.3.3.3 0.0.0.0 4.4.4.4 0.0.0.0
Ruijie(config-ext-nacl)# end
Ruijie#
```

Related Commands

Command	Description
show access-lists	Displays all access lists.
ip access-list	Defines an IP access list.

Platform Description N/A

1.34 security access-group

Use this command to configure a interface secure channel.
security access-group { *id* | *name* }
no security access-group

Parameter Description

Parameter	Description
id	Access list number.
name	Name of the access list.

Defaults None

Command mode Interface configuration mode

Usage Guide If a device is configured authentications such as 802.1x or Web authentication, the user cannot access the external network before passing the authentication. You can use this command to configure a secure channel for the users on the specified interface to access the external network without authentication.

Configuration Examples The following example configures a secure channel on interface GigaEthernet 1/1.

```
Ruijie(config)# interface GigaEthernet 1/1
Ruijie(config-if-GigabitEthernet 1/1)# security access-group 1
```

Related Commands

Command	Description
show secu-acl	Displays the secure channel configuration.

Platform Description N/A

1.35 security global access-group

Use this command to configure the global secure channel.

security global access-group { *id* | *name* }

no security global access-group

Parameter Description

Parameter	Description
id	Access list number.
name	Name of the access list.

Defaults -

Command mode Global configuration mode

Usage Guide If a device is configured authentications such as 802.1x or Web authentication, the user cannot access the external network before passing the authentication. You can use this command to configure a global secure channel for some users to access the external network without authentication.

Configuration The following example configures a global secure channel.

Examples

```
Ruijie(config)#security global access-group 1
```

Related Commands

Command	Description
show secu-acl	Displays the secure channel configuration..

Platform Description N/A

1.36 security uplink enable

Use this command to configure an exceptional interface of the global secure channel.

security uplink enable

no security uplink enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults The global secure channel takes effect on all interfaces by default.

Command mode Interface configuration mode.

Usage Guide The global secure channel takes effect on all interfaces by default. To disable the secure channel function on some interfaces, you can used this command to configure the interface as exceptional.

Configuration Examples The following example configures interface GigaEthernet 1/1 as an exceptional interface of the secure channel.

```
Ruijie(config)# interface GigaEthernet 1/1
Ruijie(config-if-GigabitEthernet 1/1)# security uplink enable
```

Related Commands

Command	Description
show secu-acl	Displays the secure channel configuration.

Platform Description N/A

1.37 show access-group

Use this command to display the access list applied to the interface.

show access-group [**interface** *interface*] | [**wlan** *wlan-id*]

Parameter Description

Parameter	Description
interface	Interface name
wlan-id	WLAN ID

Defaults -

Command mode Privileged EXEC mode

Usage Guide Use this command to display the access list configuration on the specified interface. If no interface is specified, access list configuration on all interfaces is displayed.

Configuration Examples

```
Ruijie# show access-group
ip access-list standard ipstd3
Applied On interface GigabitEthernet 0/1.
ip access-list standard ipstd4
Applied On interface GigabitEthernet 0/2.
ip access-list extended 101
Applied On interface GigabitEthernet 0/3.
ip access-list extended 102
Applied On interface GigabitEthernet 0/8.
```

Related Commands

Command	Description
ip access-group	Applies the IP access list to the interface.
mac access-group	Applies the MAC access list to the interface.
expert access-group	Applies the expert access list to the interface.
ipv6 traffic-filter	Applies the IPv6 access list to the interface.

Platform Description N/A

1.38 show access-lists

Use this command to display all access lists or the specified access list.

show access-lists [*id* | *name*] [**summary**]

Parameter Description

Parameter	Description
id	Access list number
name	Name of the IP access list

summary	Access list summary

Defaults N/A

Command mode Global configuration mode

Usage Guide Use this command to display the specified access list. If no access list number or name is specified, all the access lists are displayed.

Configuration Examples

```
Ruijie# show access-lists n_acl
ip access-list standard n_acl
Ruijie# show access-lists 102
ip access-list extended 102
Ruijie# show access-lists
ip access-list standard n_acl
ip access-list extended 101
permit icmp host 192.168.1.1 any log (1080 matches)
  permit tcp host 1.1.1.1 any established
  deny ip any any (80021 matches)
mac access-list extended mac-acl
expert access-list extended exp-acl
ipv6 access-list extended v6-acl
petmit ipv6 ::192.168.4.12 any (100 matches)
deny any any (9 matches)
```

Related Commands

Command	Description
ip access-list	Defines an IP access list.
mac access-list	Defines an extended MAC access list.
expert access-list	Defines an extended expert access list.
ipv6 access-list	Defines an extended IPv6 access list.

Platform Description N/A

1.39 show expert access-group

Use this command to display the expert access list applied to the interface.

show expert access-group [**interface** *interface*]] | [**wlan** *wlan-id*]

Parameter Description

Parameter	Description
interface	Interface name

wlan-id	WLAN ID

Defaults -

Command mode Privileged EXEC mode

Usage Guide Use this command to display the expert access list configured on the interface. If no interface is specified, the expert access lists on all interfaces are displayed.

Configuration Examples

```
Ruijie# show expert access-group interface gigabitethernet 0/2
expert access-group ee in
Applied On interface GigabitEthernet 0/2.
```

Related Commands

Command	Description
expert access-list	Defines an extended expert access list.

Platform Description N/A

1.40 show ip access-group

Use this command to display the standard and extended IP access lists on the interface.

show ip access-group [**interface** *interface*] | [**wlan** *wlan-id*]

Parameter Description

Parameter	Description
interface	Interface name
wlan-id	WLAN ID

Defaults N/A

Command mode Privileged EXEC mode

Usage Guide Use this command to display the standard and extended IP access lists configured on the interface. If no interface is specified, the standard and extended IP access lists on all interfaces are displayed.

Configuration Examples

```
Ruijie# show ip access-group interface gigabitethernet 0/1
ip access-group aaa in
Applied On interface GigabitEthernet 0/1.
```

Related

Command	Description

Commands

ip access-list	Defines an IP access list.

Platform Description N/A

1.41 show ipv6 traffic-filter

Use this command to display the IPv6 access list on the interface.

show ipv6 traffic-filter [**interface** *interface*]

Parameter Description

Parameter	Description
interface	Interface name

Defaults -

Command mode Privileged EXEC mode

Usage Guide Use this command to display the IPv6 access list configured on the interface. If no interface is specified, the IPv6 access lists on all interfaces are displayed.

Configuration Examples

```
Ruijie# show ipv6 traffic-filter interface gigabitethernet 0/4
ipv6 access-group v6 in
Applied On interface GigabitEthernet 0/4.
```

Related Commands

Command	Description
ipv6 access-list	Defines an IPv6 access list.

Platform Description N/A

1.42 show mac access-group

Use this command to display the MAC access list on the interface.

show mac access-group [**interface** *interface*] | [**wlan** *wlan-id*]

Parameter Description

Parameter	Description
interface	Interface name
wlan-id	WLAN ID

Defaults N/A

Command mode Privileged EXEC mode

Usage Guide Use this command to display the MAC access list configured on the interface. If no interface is specified, the MAC access lists on all interfaces are displayed.

Configuration Examples

```
Ruijie# show mac access-group interface gigabitethernet 0/3
mac access-group mm in
Applied On interface GigabitEthernet 0/3.
```

Related Commands

Command	Description
mac access-list	Defines a MAC access list.

Platform Description N/A

1.43 show acl res

Use this command to display information about all Ternary Content Address Memories (TCAMs) or a specified TCAM.

show acl res [**dev** *dev-num* [**slot** *slot-num*]]

Parameter Description

Parameter	Description
dev *dev_num*	Specifies the device ID.
slot *slot-num*	Specifies the slot ID.

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide Use this command to display information about the TCAM of a specified slot in a device. If no slot ID of a device is specified, information about TCAMs of all slots of the device is displayed. If no device ID is specified, information about TCAMs of all devices is displayed.

Configuration Examples The following example displays the usage amount, usage rate, and available capacity of TCAM resources on all devices.

```
Ruijie#show acl res
```

```
acl usage warn limit: 100%
type            total           used            free            usage
------------    --------        --------        --------        --------
##Dev=1,Slot=4,unit=0
IFP ACL         24576           61              24515           1%
    slice0      2048            2               2046
    slice1      2048            1               2047
    slice2      2048            29              2019
    slice3      2048            29              2019
    slice4      2048            0               2048
    slice5      2048            0               2048
    slice6      2048            0               2048
    slice7      2048            0               2048
    slice8      2048            0               2048
    slice9      2048            0               2048
    slice10     2048            0               2048
    slice11     2048            0               2048
EFP ACL         24576           61              24515           1%
    slice0      2048            2               2046
    slice1      2048            1               2047
    slice2      2048            29              2019
    slice3      2048            29              2019
    slice4      2048            0               2048
    slice5      2048            0               2048
    slice6      2048            0               2048
    slice7      2048            0               2048
    slice8      2048            0               2048
    slice9      2048            0               2048
    slice10     2048            0               2048
    slice11     2048            0               2048
##Dev=1,Slot=4,unit=1
IFP ACL         24576           59              24517           1%
    slice0      2048            1               2047
    slice1      2048            0               2048
    slice2      2048            29              2019
    slice3      2048            29              2019
    slice4      2048            0               2048
    slice5      2048            0               2048
    slice6      2048            0               2048
    slice7      2048            0               2048
    slice8      2048            0               2048
    slice9      2048            0               2048
    slice10     2048            0               2048
    slice11     2048            0               2048
```

```
EFP ACL          24576          59             24517          1%
    slice0       2048           1              2047
    slice1       2048           0              2048
    slice2       2048           29             2019
    slice3       2048           29             2019
    slice4       2048           0              2048
    slice5       2048           0              2048
    slice6       2048           0              2048
    slice7       2048           0              2048
    slice8       2048           0              2048
    slice9       2048           0              2048
    slice10      2048           0              2048
    slice11      2048           0              2048
##Dev=1,Slot=4,unit=2
IFP ACL          24576          59             24517          1%
    slice0       2048           1              2047
    slice1       2048           0              2048
    slice2       2048           29             2019
    slice3       2048           29             2019
    slice4       2048           0              2048
    slice5       2048           0              2048
    slice6       2048           0              2048
    slice7       2048           0              2048
    slice8       2048           0              2048
    slice9       2048           0              2048
    slice10      2048           0              2048
    slice11      2048           0              2048
EFP ACL          24576          59             24517          1%
    slice0       2048           1              2047
    slice1       2048           0              2048
    slice2       2048           29             2019
    slice3       2048           29             2019
    slice4       2048           0              2048
    slice5       2048           0              2048
    slice6       2048           0              2048
    slice7       2048           0              2048
    slice8       2048           0              2048
    slice9       2048           0              2048
    slice10      2048           0              2048
    slice11      2048           0              2048
```

The following example displays the usage amount, usage rate, and available capacity of TCAM resources in all slots of device 1.

```
Ruijie(config)#show acl res dev 1
```

```
acl usage warn limit: 100%
type            total           used            free            usage
------------    --------        --------        --------        --------
##Dev=1,Slot=4,unit=0
IFP ACL         24576           60              24516           1%
    slice0      2048            2               2046
    slice1      2048            0               2048
    slice2      2048            0               2048
    slice3      2048            0               2048
    slice4      2048            0               2048
    slice5      2048            0               2048
    slice6      2048            0               2048
    slice7      2048            0               2048
    slice8      2048            0               2048
    slice9      2048            0               2048
    slice10     2048            29              2019
    slice11     2048            29              2019
EFP ACL         24576           60              24516           1%
    slice0      2048            2               2046
    slice1      2048            0               2048
    slice2      2048            0               2048
    slice3      2048            0               2048
    slice4      2048            0               2048
    slice5      2048            0               2048
    slice6      2048            0               2048
    slice7      2048            0               2048
    slice8      2048            0               2048
    slice9      2048            0               2048
    slice10     2048            29              2019
    slice11     2048            29              2019
##Dev=1,Slot=4,unit=1
IFP ACL         24576           58              24518           1%
    slice0      2048            29              2019
    slice1      2048            29              2019
    slice2      2048            0               2048
    slice3      2048            0               2048
    slice4      2048            0               2048
    slice5      2048            0               2048
    slice6      2048            0               2048
    slice7      2048            0               2048
    slice8      2048            0               2048
    slice9      2048            0               2048
    slice10     2048            0               2048
    slice11     2048            0               2048
```

```
EFP ACL          24576          58             24518          1%
    slice0       2048           29             2019
    slice1       2048           29             2019
    slice2       2048           0              2048
    slice3       2048           0              2048
    slice4       2048           0              2048
    slice5       2048           0              2048
    slice6       2048           0              2048
    slice7       2048           0              2048
    slice8       2048           0              2048
    slice9       2048           0              2048
    slice10      2048           0              2048
    slice11      2048           0              2048
##Dev=1,Slot=4,unit=2
IFP ACL          24576          58             24518          1%
    slice0       2048           29             2019
    slice1       2048           29             2019
    slice2       2048           0              2048
    slice3       2048           0              2048
    slice4       2048           0              2048
    slice5       2048           0              2048
    slice6       2048           0              2048
    slice7       2048           0              2048
    slice8       2048           0              2048
    slice9       2048           0              2048
    slice10      2048           0              2048
    slice11      2048           0              2048
EFP ACL          24576          58             24518          1%
    slice0       2048           29             2019
    slice1       2048           29             2019
    slice2       2048           0              2048
    slice3       2048           0              2048
    slice4       2048           0              2048
    slice5       2048           0              2048
    slice6       2048           0              2048
    slice7       2048           0              2048
    slice8       2048           0              2048
    slice9       2048           0              2048
    slice10      2048           0              2048
    slice11      2048           0              2048
```

The following example displays the usage amount, usage rate, and available capacity of TCAM resources in slot 4 of device 1.

```
Ruijie#show acl res dev 1 slot 4
```

```
acl usage warn limit: 100%
type            total           used            free            usage
------------    --------        --------        --------        --------
##Dev=1,Slot=4,unit=0
IFP ACL         24576           61              24515           1%
    slice0      2048            2               2046
    slice1      2048            1               2047
    slice2      2048            29              2019
    slice3      2048            29              2019
    slice4      2048            0               2048
    slice5      2048            0               2048
    slice6      2048            0               2048
    slice7      2048            0               2048
    slice8      2048            0               2048
    slice9      2048            0               2048
    slice10     2048            0               2048
    slice11     2048            0               2048
EFP ACL         24576           61              24515           1%
    slice0      2048            2               2046
    slice1      2048            1               2047
    slice2      2048            29              2019
    slice3      2048            29              2019
    slice4      2048            0               2048
    slice5      2048            0               2048
    slice6      2048            0               2048
    slice7      2048            0               2048
    slice8      2048            0               2048
    slice9      2048            0               2048
    slice10     2048            0               2048
    slice11     2048            0               2048
##Dev=1,Slot=4,unit=1
IFP ACL         24576           59              24517           1%
    slice0      2048            1               2047
    slice1      2048            0               2048
    slice2      2048            29              2019
    slice3      2048            29              2019
    slice4      2048            0               2048
    slice5      2048            0               2048
    slice6      2048            0               2048
    slice7      2048            0               2048
    slice8      2048            0               2048
    slice9      2048            0               2048
    slice10     2048            0               2048
    slice11     2048            0               2048
```

```
EFP ACL          24576          59          24517          1%
    slice0       2048           1           2047
    slice1       2048           0           2048
    slice2       2048           29          2019
    slice3       2048           29          2019
    slice4       2048           0           2048
    slice5       2048           0           2048
    slice6       2048           0           2048
    slice7       2048           0           2048
    slice8       2048           0           2048
    slice9       2048           0           2048
    slice10      2048           0           2048
    slice11      2048           0           2048
##Dev=1,Slot=4,unit=2
IFP ACL          24576          59          24517          1%
    slice0       2048           1           2047
    slice1       2048           0           2048
    slice2       2048           29          2019
    slice3       2048           29          2019
    slice4       2048           0           2048
    slice5       2048           0           2048
    slice6       2048           0           2048
    slice7       2048           0           2048
    slice8       2048           0           2048
    slice9       2048           0           2048
    slice10      2048           0           2048
    slice11      2048           0           2048
EFP ACL          24576          59          24517          1%
    slice0       2048           1           2047
    slice1       2048           0           2048
    slice2       2048           29          2019
    slice3       2048           29          2019
    slice4       2048           0           2048
    slice5       2048           0           2048
    slice6       2048           0           2048
    slice7       2048           0           2048
    slice8       2048           0           2048
    slice9       2048           0           2048
    slice10      2048           0           2048
    slice11      2048           0           2048
```

1.44 show acl res detail

Use this command to display the details of all Ternary Content Address Memories (TCAMs) or a

specified TCAM.

show acl res detail [**dev** *dev-num* [**slot** *slot-num*]]

Parameter Description

Parameter	Description
dev *dev_num*	Device ID
slot *slot-num*	Slot ID

Command mode Privileged EXEC mode

Usage Guide Use this command to display the details of the TCAM of a specified slot in a device. If no slot ID of a device is specified, information about TCAMs of all slots of the device is displayed. If no device ID is specified, information about TCAMs of all devices is displayed.

Configuration Examples The following example displays the details of TCAM resource usage on all devices.

```
Ruijie#show acl res detail
Dev: 1         Slot: 3           unit: 0           stage: IFP
group id: 12   group pri: 115    total entry: 128   used entry: 31
width: DOUBLE  slice id: 0/1(reserved)
app type           used entry
--------           ----------
CPP                         30
SDN                         1

group id: 1    group pri: 116    total entry: 2048  used entry: 18
width: DOUBLE  slice id: 11/12
app type           used entry
--------           ----------
CPP(v6)                     18

group id: 3    group pri: 4      total entry: 2048  used entry: 4
width: SINGLE  slice id: 2
app type           used entry
--------           ----------
L3V6INTF-COUNT(v6)          4

group id: 4    group pri: 3      total entry: 2048  used entry: 6
width: SINGLE  slice id: 3
app type           used entry
--------           ----------
L3INTF-COUNT                6

Dev: 1         Slot: 3           unit: 0           stage: EFP
```

```
group id: 2    group pri: 7       total entry: 2048  used entry: 4
width: SINGLE  slice id: 10
app type            used entry
--------            ----------
L3INTF-COUNT                4

Dev: 1         Slot: 3           unit: 1            stage: IFP
group id: 12   group pri: 115    total entry: 128   used entry: 31
width: DOUBLE  slice id: 0/1(reserved)
app type            used entry
--------            ----------
CPP                         30
SDN                         1

group id: 1    group pri: 116    total entry: 2048  used entry: 18
width: DOUBLE  slice id: 3/4
app type            used entry
--------            ----------
CPP(v6)                     18

Dev: 1         Slot: 3           unit: 2            stage: IFP
group id: 12   group pri: 115    total entry: 128   used entry: 31
width: DOUBLE  slice id: 0/1(reserved)
app type            used entry
--------            ----------
CPP                         30
SDN                         1

group id: 1    group pri: 116    total entry: 2048  used entry: 18
width: DOUBLE  slice id: 3/4
app type            used entry
--------            ----------
CPP(v6)                     18
```

The following example displays details of TCAM resource usage in all slots of device 1.

```
Ruijie#show acl res detail dev 1
Dev: 1         Slot: 3           unit: 0            stage: IFP
group id: 12   group pri: 115    total entry: 128   used entry: 31
width: DOUBLE  slice id: 0/1(reserved)
app type            used entry
--------            ----------
CPP                         30
SDN                         1
```

```
group id: 1    group pri: 116     total entry: 2048  used entry: 18
width: DOUBLE  slice id: 11/12
app type            used entry
--------            ----------
CPP(v6)                      18

group id: 3    group pri: 4       total entry: 2048  used entry: 4
width: SINGLE  slice id: 2
app type            used entry
--------            ----------
L3V6INTF-COUNT(v6)           4

group id: 4    group pri: 3       total entry: 2048  used entry: 6
width: SINGLE  slice id: 3
app type            used entry
--------            ----------
L3INTF-COUNT                 6

Dev: 1         Slot: 3           unit: 0            stage: EFP
group id: 2    group pri: 7       total entry: 2048  used entry: 4
width: SINGLE  slice id: 10
app type            used entry
--------            ----------
L3INTF-COUNT                 4

Dev: 1         Slot: 3           unit: 1            stage: IFP
group id: 12   group pri: 115     total entry: 128   used entry: 31
width: DOUBLE  slice id: 0/1(reserved)
app type            used entry
--------            ----------
CPP                          30
SDN                           1

group id: 1    group pri: 116     total entry: 2048  used entry: 18
width: DOUBLE  slice id: 3/4
app type            used entry
--------            ----------
CPP(v6)                      18

Dev: 1         Slot: 3           unit: 2            stage: IFP
group id: 12   group pri: 115     total entry: 128   used entry: 31
width: DOUBLE  slice id: 0/1(reserved)
app type            used entry
--------            ----------
```

```
CPP                          30
SDN                          1

group id: 1    group pri: 116     total entry: 2048  used entry: 18
width: DOUBLE  slice id: 3/4
app type            used entry
--------            ----------
CPP(v6)                      18
```

The following example displays the details of TCAM resource usage in slot 3 of device 1.

```
Ruijie#show acl res detail dev 1 slot 3
Dev: 1         Slot: 3           unit: 0           stage: IFP
group id: 12   group pri: 115    total entry: 128   used entry: 31
width: DOUBLE  slice id: 0/1(reserved)
app type            used entry
--------            ----------
CPP                          30
SDN                          1

group id: 1    group pri: 116    total entry: 2048  used entry: 18
width: DOUBLE  slice id: 11/12
app type            used entry
--------            ----------
CPP(v6)                      18

group id: 3    group pri: 4      total entry: 2048  used entry: 4
width: SINGLE  slice id: 2
app type            used entry
--------            ----------
L3V6INTF-COUNT(v6)           4

group id: 4    group pri: 3      total entry: 2048  used entry: 6
width: SINGLE  slice id: 3
app type            used entry
--------            ----------
L3INTF-COUNT                 6

Dev: 1         Slot: 3           unit: 0           stage: EFP
group id: 2    group pri: 7      total entry: 2048  used entry: 4
width: SINGLE  slice id: 10
app type            used entry
--------            ----------
L3INTF-COUNT                 4
```

```
Dev: 1         Slot: 3           unit: 1           stage: IFP
group id: 12   group pri: 115    total entry: 128  used entry: 31
width: DOUBLE  slice id: 0/1(reserved)
app type           used entry
--------           ----------
CPP                         30
SDN                         1

group id: 1    group pri: 116    total entry: 2048 used entry: 18
width: DOUBLE  slice id: 3/4
app type           used entry
--------           ----------
CPP(v6)                     18

Dev: 1         Slot: 3           unit: 2           stage: IFP
group id: 12   group pri: 115    total entry: 128  used entry: 31
width: DOUBLE  slice id: 0/1(reserved)
app type           used entry
--------           ----------
CPP                         30
SDN                         1

group id: 1    group pri: 116    total entry: 2048 used entry: 18
width: DOUBLE  slice id: 3/4
app type           used entry
--------           ----------
CPP(v6)                     18
```

Related Commands

Command	Description
N/A	N/A

1.45 show redirect interface

Use this command to display the access redirection configuration.

show redirect [**interface** *interface-name*]

Parameter Description

Parameter	Description
interface-name	Interface name

Defaults N/A

Command Privileged EXEC mode

mode

Usage Guide Use this command to display the access redirection configuration on the interface. If no interface is specified, the access redirection configuration on all interfaces is displayed.

Configuration Examples The following example displays the access redirection configuration on interface GigabitEthernet 0/3.

```
Ruijie #show redirect interface gigabitEthernet 0/3
acl redirect configuration on interface gigabitEthernet 0/3
redirect destination interface gigabitEthernet 0/3 acl 1 in
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.46 svi router-acls enable

Use this command to enable the SVI filter only for the Layer3 packets. Use the **no** form of this command to disable this function.

svi router-acls enable

no svi router-acls enable

Parameter Description

Parameter	Description
N/A	N/A.

Defaults The SVI filter takes effect for both Layer2 and Layer3 packets by default.

Command mode Global configuration mode

Usage Guide Use this command to make the SVI filter take effect only for the Layer3 packets,

Configuration Examples The following example enables the SVI filter only for the Layer3 packets.

```
Ruijie(config)#svi router-acls enable
```

Related Commands

Command	Description
N/A	N/A

Platform N/A

Description

2 QoS Commands

2.1 apply acl

Use this command to apply the ACL in the policy map class configuration mode. Use the **no** form of this command to delete the ACL.

apply acl

no apply acl

Parameter Description

Parameter	Description

Defaults No stream behavior is specified for the class associated with the policy by default.

Command Mode Policy map class configuration mode

Usage Guide ACL should be created first.

Only one ACL can be applied in one policy, and the behavior takes effect according to the ACL.

Configuration Examples The following example creates the class cmap1 and matches the ACL acl_10.

```
Ruijie(config)# class-map cmap1
Ruijie(config-cmap)# match acl acl_10
```

The following example creates the policy pmap1 and enters the policy configuration mode; associates the class cmap1 and enters the policy map class configuration mode.

```
Ruijie(config)# policy-map pmap1
Ruijie(config-pmap)# class cmap1
```

The following example applies the ACL.

```
Ruijie(config-pmap-c)# apply acl
```

Related Commands

Command	Description
show policy-map [*policy-map-name* **[class** *class-map-name*]]	Displays the policy map.

Platform Description N/A

2.2 class

Use this command to add reference to an existing class map. Use the **no** form of this command to remove the a class from the policy map.

class *class-map-name*

no class *class-map-name*

Parameter Description

Parameter	Description
class-map-name	Reference to a class map.

Defaults None

Command Mode Policy configuration mode

Usage Guide N/A

Configuration Examples The following example adds reference to the class map named cmap1.

```
Ruijie(config)# class-map cmap1
Ruijie(config-cmap)# match ip dscp 5
Ruijie(config-cmap)# exit

Ruijie(config)# policy-map pmap1

Ruijie(config-pmap)# class cmap1

Ruijie(config-pmap-c)# end
```

Related Commands

Command	Description
show policy-map [*policy-map-name* **[class** *class-map-name*]]	Displays the policy map.

Platform Description N/A

2.3 class map

Use this command to create a class map and enter class-map configuration mode. Use the **no** or **default** form of this command to remove a class map.

class-map *class-map-name*

no class-map *class-map-name*

default class-map *class-map-name*

Parameter Description

Parameter	Description
class-map-name	Class map name. The class map name can be a maximum of 31 characters.

Defaults None

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example creates a class map named cm_acl to match an access list named me.

```
Ruijie(config)# mac access-list extended me
Ruijie(config-ext-macl)# permit host 1111.2222.3333 any
Ruijie(config-ext-macl)# exit
Ruijie(config)# class-map cm_acl
Ruijie(config-cmap)# match access-group me
Ruijie(config-cmap)# exit
```

The following example creates a class map named cm_dscp to match DHCP 8, 16 and 24.

```
Ruijie(config)# class-map cm_dscp
Ruijie(config-cmap)# match ip dscp 8 16 24
Ruijie(config-cmap)# exit
```

Related Commands

Command	Description
show class-map [*class-map-name*]	Displays the class map.

Platform Description N/A

2.4 clear qos wred-ecn statistics

Use this command to clear the statistics of packets discarded by WRED and packets marked by ECN.

clear qos wred-ecn statistics [**interfaces** *interface-id*]

Parameter Description

Parameter	Description
interface-id	Indicates the to-be-cleared interface ID.

Defaults N/A

Command Mode Privileged EXEC mode/global configuration mode/interface configuration mode

Usage Guide N/A

Configuration Examples The following example clears the statistics of packets discarded by WRED and packets marked by ECN on all interfaces.

```
Ruijie#clear qos wred-ecn statistics
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.5 drr-queue bandwidth

Use this command to set the DRR queue weight ratio. Use the **no** or **default** form of this command to restore the default setting.

drr-queue bandwidth *weight1...weight8*

no drr-queue bandwidth

default drr-queue bandwidth

Parameter Description

Parameter	Description
weight1...weight8	8 queue weights. The default queue weight ratio is 1:1:1:1:1:1:1:1. For the products supporting the SP scheduling policy, the weight range is from 0 to 15. For the products not supporting the SP scheduling policy, the weight range is from 1 to 15.

Defaults The default queue weight ratio is 1:1:1:1:1:1:1:1.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example configures the DRR queue weight ratio to 1:1:1:2:2:4:6:8.

```
Ruijie(config)# drr-queue bandwidth 1 2 3 4 5 6 7 8
```

Related Commands

Command	Description
show mls qos queuing	Displays information about the queue.

Platform Description N/A

2.6 match

Use this command to define a match criteria in class map configuration mode. Use the **no** form of this command to remove the match criteria.

match { **access-group** *access_list* |}

no match { **access-group** *access_list* |}

Parameter Description

Parameter	Description
access-group *access_list*	Identifies a numbered or named access list as the match criteria.

Defaults None

Command Mode Class map configuration mode

Usage Guide N/A

Configuration Examples N/A

Related Commands

Command	Description
show class-map [*class-map-name*]	Displays the class map.

Platform Description N/A

2.7 mls qos cos

Use this command to configure the CoS value of an interface. Use the **no** form of this command to restore the default setting.

mls qos cos *default-cos*

no mls qos cos

Parameter Description

Parameter	Description
default-cos	CoS value of the interface. The range is from 0 to 7.

Defaults The default CoS value is 0.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example configures the default CoS value to 7.

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mls qos cos 7
```

Related Commands	Command	Description
	show mls qos interface *interface-id*	Displays information of the specified interface.

Platform Description N/A

2.8 mls qos map cos-dscp

Use this command to map the CoS value to the DSCP value. Use the **no** or **default** form of this command to restore the default CoS-DSCP mapping.

mls qos map cos-dscp *dscp1...dscp8*

no mls qos map cos-dscp

default mls qos map cos-dscp

Parameter Description	Parameter	Description
	dscp1...dscp8	Specifies the DSCP value. The range is from 0 to 63.

Defaults By default, the CoS 0, 1, 2, 3, 4, 5, 6, 7 is mapped to the DSCP 0, 8, 16, 24, 32, 40, 48, 56 respectively.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples

```
Ruijie(config)# mls qo map cos-dscp 8 10 16 18 24 26 32 34
```

Related Commands	Command	Description
	show mls qos maps cos-dscp	Displays the CoS-DSCP mapping.

Platform Description N/A

2.9 mls qos map dscp-cos

Use this command to map the DSCP value to the CoS value. Use the **no** or **default** form of this

command to restore the default DSCP-CoS mapping.

mls qos map dscp-cos *dscp-list* **to** *cos*

no mls qos map dscp-cos

default mls qos map dscp-cos

Parameter Description

Parameter	Description
dscp-list	DSCP list. The range is from 0 to 63.
cos	CoS value. The range is from 0 to 7.

Defaults

The default DSCP-CoS mapping is listed below:

DSCP 0-7	DSCP 8-15	DSCP 16-23	DSCP 24-31	DSCP 32-39	DSCP 40-47	DSCP 48-55	DSCP 56-63
CoS 0	CoS 1	CoS 2	CoS 3	CoS 4	CoS 5	CoS 6	CoS 7

Command Mode

Global configuration mode.

Usage Guide

N/A

Configuration Examples

```
Ruijie(config)# mls qos map dscp-cos 8 10 16 18 to 0
```

Related Commands

Command	Description
show mls qos maps dscp-cos	Displays the DSCP-CoS mapping.

Platform Description

N/A

2.10 mls qos remark disable

Use this command to disable the packet priority modification function.

mls qos remark disable

Parameter Description

Parameter	Description

Defaults The packet priority can be modified by default, that is, the remark function is enabled.

Command Mode Global configuration mode

Default Level 14

Usage Guide Whether this command is supported depends on the product chip capability value.

Configuration Examples The following example disables the packet priority modification function.

```
Ruijie(config)# mls qos remark disable
```

2.11 mls qos scheduler

Use this command to configure the output queue scheduling. Use the **no** or **default** form of this command to restore the default scheduler.

mls qos scheduler [**sp** | **rr** | **wrr** | **drr | wfq**]

no mls qos scheduler

default mls qos scheduler

Parameter Description

Parameter	Description
sp	Specifies the absolute priority scheduling.
rr	Specifies the round-robin scheduling.
wrr	Specifies the frame count weighted round-robin scheduling.
drr	Specifies the frame length weighted round-robin scheduling.
wfq	Specifies the weighted fair queuing.

Defaults The default queue scheduling is **wrr**.

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example specifies the sp scheduling.

```
Ruijie(config)# mls qos scheduler sp
```

Related Commands

Command	Description
show mls qos scheduler	Displays the output queue scheduling.

Platform Description N/A

2.12 mls qos trust

Use this command to configure the trust mode on an interface. Use the **no** or **default** form of this command to restore the default setting.

mls qos trust { **cos** | **dscp** | **ip-precedence** }

no mls qos trust

default mls qos trust

Parameter Description

Parameter	Description
cos	Specifies the CoS trust mode.
dscp	Specifies the DSCP trust mode.
ip-precedence	Specifies the IP-PRE trust mode.

Defaults No trust mode is configured by default.

Command Mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example configures the CoS trust mode.

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mls qos trust cos
```

Related Commands

Command	Description
show mls qos interface *interface-id*	Displays the specified interface configuration.

Platform Description N/A

2.13 police

Use this command to configure traffic policing for a class map in a policy map. Use the **no** form of this command to remove traffic policing for the class map.

police *rate-bps burst-byte* [**exceed-action** { **drop** | **dscp** *new-dscp* | **cos** *new-cos* [**none-tos**] }]
no police

Parameter Description

Parameter	Description
rate-bps	Bandwidth limit value per second (The unit is KBits). This value depends on the specific product.
burst-byte	Burst traffic limit value (The unit is KBytes). This value depends on the specific product.
drop	Drops the packet. This is available only when the packet exceeds the bandwidth limit.
dscp *new-dscp*	Modifies the DSCP value of the packet. This is available only when the packet exceeds bandwidth limit. The DSCP value range is from 0 to 63.
cos *new-cos*	Modifies the CoS value of the packet. This is available only when the packet exceeds bandwidth limit. The CoS value range is from 0 to 7.
none-tos	Modifies the CoS value only.

Defaults No traffic policing is configured for the class map by default.

Command Mode Policy map class configuration mode

Usage Guide N/A

Configuration Examples The following example configures traffic policing which modifies the DSCP value of the packet to 6 for class map “cm-acl” in policy map “pmap1”.

```
Ruijie(config)# policy-map pmap1
Ruijie(config-pmap)# class cm-acl
Ruijie(config-pmap-c)# police 102400 4096 exceed-action dscp 16
```

Related Commands

Command	Description
show policy-map [*policy-map-name* [**class** *class-map-name*]]	Displays the policy map configuration.

Platform Description N/A

2.14 policy map

Use the following command to create a policy map and enter policy map configuration mode. Use the **no** or **default** form of this command to remove the specified policy map.
policy-map *policy-map-name*

no policy-map *policy-map-name*
default policy-map *policy-map-name*

Parameter Description

Parameter	Description
policy-map-name	Policy map name. The policy map name can be a maximum of 31 characters.

Defaults No policy map is configured by default.

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example creates policy map “po”, and then adds a reference to class map “cmap1”.

```
Ruijie(config)# policy-map po
Ruijie(config-pmap)# class cmapl
```

Related Commands

Command	Description
show policy-map [*policy-map-name* [**class** *class-map-name*]]	Displays the policy map configuration.

Platform Description N/A

2.15 priority-queue

Use this command to configure the output queue scheduling policy to SP. Use the **no** or **default** form of this command to restore the default queue scheduling policy.
priority-queue
no priority-queue

Parameter Description

Parameter	Description
N/A	N/A

Defaults The default output queue scheduling policy is WRR.

Command Mode Global configuration mode.

Usage Guide This command shares the same configuration with the **mls qos scheduler sp**. The **show run** command displays this configuration in the **mls qos scheduler sp** item instead of **priority-queue**.

Configuration Examples The following example configures the output queue scheduling policy to SP.

```
Ruijie(config)# priority-queue
```

Related Commands

Command	Description
show mls qos scheduler	Displays the output queue scheduling policy.

Platform Description N/A

2.16 priority-queue cos-map

Use this command to configure the mapping between the CoS value and the queue ID. Use the **no** or **default** form of this command to restore the default CoS mapping to the queue.

priority-queue cos-map *qid cos0* [*cos1* [*cos2* [*cos3* [*cos4* [*cos5* [*cos6* [*cos7*]]]]]]]

no priority-queue cos-map

default priority-queue cos-map

Parameter Description

Parameter	Description
qid	Queue ID. The range is from 1 to 8.
cos0 ... cos7	CoS value. The range is from 0 to 7.

Defaults The default mapping between the CoS value and the queue ID is listed below:

Queue 1	Queue 2	Queue 3	Queue 4	Queue 5	Queue 6	Queue 7	Queue 8
CoS 0	CoS 1	CoS 2	CoS 3	CoS 4	CoS 5	CoS 6	CoS 7

Command Mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example maps the CoS 3, 5 to the output queue 1.

```
Ruijie(config)#priority-queue cos-map 1 3 5
```

Related Commands

Command	Description
show mls qos queuing	Displays the output queues.

Platform Description N/A

2.17 qos-queue compatible enable

This command is used to configure the queue display of all queues on the device to 0–7.

qos-queue compatible enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, the queue display of all queues on the device is 1–8.

Command Mode Global configuration mode

Usage Guide The chip capability depends whether the command is supported.

Configuration Examples

The following example configures the queue display of all queues on the device to 0–7.

```
Ruijie(config)# qos-queue compatible enable
```

Related Commands

Command	
show running-config	**Description**
	Displays the configuration.

Platform Description N/A

2.18 qos queue

Use this command to configure a minimum or maximum of the interface bandwidth to a queue. Use the **no** or **default** form of this command to remove the minimum or maximum of the interface bandwidth.

qos queue *queue-id* **bandwidth** { **minimum** | **maximum** } *bandwidth*

no qos queue *queue-id* **bandwidth** { **minimum** | **maximum** }

default qos queue *queue-id* **bandwidth** { **minimum** | **maximum** }

Parameter Description

Parameter	Description
queue]	The **queue** keyword indicates configuring the minimum or maximum of the interface bandwidth to the queue on the device supporting both unicast and multicast queue bandwidth configuration.
queue-id	Queue ID. The range is from 1 to 8.
bandwidth { **minimum** | **maximum** } *bandwidth*	Bandwidth value. The value range depends on the specific product.

Defaults No minimum or maximum of interface bandwidth to a queue is configured by default.

Command Mode Interface configuration mode

Usage Guide N/A

Configuration Examples

```
N/A
```

Related Commands

Command	Description
show qos bandwidth [**interfaces** *interface-id*]	Displays the interface bandwidth of the queue.

Platform Description N/A

2.19 qos queue ecn

Use this command to enable the queue ECN function. Use the **no** form of this command to disable the function.

qos queue *queue-id* **ecn**

no qos queue *queue-id* **ecn**

Parameter Description

Parameter	Description
queue-id	Queue ID. The range is from 1 to 8.

Defaults By default, it is disabled.

Command Mode Interface configuration mode

Usage Guide Both the **qos queue ecn** and global **queueing wred** command must be configured to enable the queue ECN function

Configuration Examples The following example enables ECN on queue 1 of interface gigabitEthernet 0/1.

```
Ruijie# configure terminal

Ruijie(config)# queueing wred

Ruijie(config)# interface gigabitEthernet 0/1

Ruijie(config-if-GigabitEthernet 0/1)# qos queue 1 ecn

Ruijie(config-if-GigabitEthernet 0/1)# exit
```

Platform Description N/A

2.20 qos wred-ecn statistics sample-period

Use this command to configure the statistics sampling interval of packets discarded by WRED and packets marked by ECN. Use the **no** or **default** form of this command to restore the default settings.

qos wred-ecn statistics sample-period *period*

no qos wred-ecn statistics sample-period

default qos wred-ecn statistics sample-period

Parameter Description

Parameter	Description
period	Indicates the sampling interval. The default range is 1 to 100.

Defaults The default range varies with products.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example sets the sampling interval to 5 seconds.

```
Ruijie# configure terminal

Ruijie(config)# qos wred-ecn statistics sample-period 5
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.21 queueing wred

Use this command to enable the WRED (Weighted Random Early Detection) function. Use the **no** or **default** form of this command to disable the WRED function.

queueing wred

no queueing wred

default queueing wred

Parameter Description

Parameter	Description
N/A	N/A

Defaults WRED is disabled by default.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example enables WRED.

```
Ruijie(config)# queueing wred
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.22 rate-limit

Use this command to configure rate limiting on the interface. Use the **no** or **default** form of this command to remove rate limiting from the interface.

rate-limit { input | output } *bps burst-size*

no rate-limit { **input | output** }

default rate-limit { **input | output** }

Parameter Description

Parameter	Description
input	Configures input rate limiting.
output	Configures output rate limiting.
bps	Bandwidth limit value per second (The unit is KBits). This value depends on the specific product.
burst-size	Burst traffic limit value (The unit is KBytes). This value depends on the specific product.

Defaults Rate limiting is not configured by default.

Command Mode Interface configuration mode.

Usage Guide This command can be configured only on Ethernet interfaces.

Configuration Examples The following example configures the rate limit value to 10 Mbps, and the burst traffic limit value to 256 Kbps.

```
Ruijie(config)# interface gigabitethernet 1/3
```

```
Ruijie(config-if-GigabitEthernet 1/3)# rate-limit input 10240 256
```

Related Commands

Command	Description
show mls qos rate-limit [**interface** *interface-id*]	Displays the rate limiting configuration of the interface.

Platform Description N/A

2.23 service-policy

Use this command to apply the policy map to the interface, the virtual group or globally. Use the **no** or **default** form of this command to remove the policy map from the interface, the virtual group or globally.

service-policy { **input** | **output** } *policy-map-name*

no service-policy { **input** | **output** } *policy-map-name*

default service-policy { **input** | **output** } *policy-map-name*

Parameter Description

Parameter	Description
policy-map-name	Policy map name
input	Applies the policy map to the input direction.
output	Applies the policy map to the output direction.

Defaults No policy map is configured on the interface or virtual group by default.

Command Mode Interface configuration mode, virtual group configuration mode, global configuration mode.

Usage Guide N/A

Configuration Examples The following example applies policy map “po” to the input direction of interface GigabitEthernet 1/3.

```
Ruijie(config)# interface gigabitethernet 1/3
Ruijie(config-if-GigabitEthernet 1/3)# service-policy input po
```

The following example applies policy map “po” to the output direction of virtual group 3.

```
Ruijie(config)# virtual-group 3
Ruijie(config-VirtualGroup)# service-policy output po
```

The following example applies policy map “po” to the output direction globally.

```
Ruijie(config)# service-policy output po
```

Related Commands

Command	Description
show mls qos interface policers	Displays the policy map configuration on the interface.

show mls qos virtual-group policers	Displays the policy map configuration on the virtual group.

Platform Description N/A

2.24 set

Use this command to configure the CoS, DSCP or VID value for the traffic. Use the **no** form of this command to remove the CoS, DSCP or VID value from the traffic.

set { **ip dscp** *new-dscp* [**with cos** *new-cos* **priority**] | **cos** *new-cos* [**priority** | **none-tos**] | **vid** *new-vid* }

no set { **ip dscp** | **cos** | **vid** }

Parameter Description

Parameter	Description
ip dscp *new-dscp*	Configures the DSCP value for the traffic. The range is from 0 to 63.
with cos *new-cos* **priority**	Configures the queue priority (same as **priority**)
cos *new-cos*	Configures the CoS value for the traffic. The range is from 0 to 7.
priority	Configures the queue priority but does not change CoS value.
none-tos	Configures the CoS value only.
vid *new-vid*	Configures the VID value for the traffic. The range is from 1 to 4094.

Defaults No CoS or DSCP value is configured for the traffic in policy map class mode.

Command Mode Policy map class configuration mode

Usage Guide N/A

Configuration Examples The following example creates policy map “pmap1”, and adds a reference to class map “cmap1”.

```
Ruijie(config)# policy-map pmap1
Ruijie(config-pmap)# class cmap1
```

The following example modifies the CoS value of the traffic to 3.

```
Ruijie(config-pmap-c)# set cos 3
```

Related Commands

Command	Description
show policy-map[*policy-map-name* [**class** *class-map-name*]]	Displays the policy map configuration on the interface.

Platform N/A

Description

2.25 show class-map

Use this command to display the class map.

show class-map [*class-map-name*]

Parameter Description

Parameter	Description
class-map-name	Class map name.

Defaults None

Command Mode Privileged EXEC mode, global configuration mode, interface configuration mode.

Usage Guide N/A

Configuration Examples The following example displays all class maps.

```
Ruijie# show class-map

 Class Map cmap1
   Match ip dscp 20 40
 Class Map cmap2
   Match access-group 110
```

The fields in the output of this command are described in the following table.

Field	Description
Class Map	Indicates the class map name.
Match	Indicates the matched rule.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.26 show mls qos interface

Use this command to display the QoS configuration of the interface.

show mls qos interface [*interface-id*] [**policers**]

Parameter Description

Parameter	Description
interface-id	Interface name

policers	Displays the traffic policing configured on the interface.

Defaults None

Command Mode Privileged EXEC mode, global configuration mode, interface configuration mode.

Usage Guide N/A

Configuration Examples The following example displays the QoS configuration of interface GigabitEthernt 1/3.

```
Ruijie# show mls qos interface gigabitethernet 1/3
Interface: GigabitEthernet 1/3
Ratelimit input: 10240 256
Ratelimit output: 51200 4096
Attached input  policy-map: pmap1
Attached output policy-map:
Default trust: dscp
Default cos: 3
Scheduler type: drr
Wrr queue bandwidth: 1 1 1 1 2 2 2 2
Wfq queue bandwidth: 1 1 2 2 4 4 4 4
```

The fields in the output of this command are described in the following table.

Field	Description
Interface	Indicates the interface name.
Ratelimit input	Indicates the input rate limit value .
Ratelimit output	Indicates the output rate limit value .
Attached input policy-map	Indicates the input policy map .
Attached output policy-map	Indicates the output policy map.
Default trust	Indicates the trust mode of the interface.
Default cos	Indicates the default CoS value.
Scheduler type	Indicate the scheduling policy of the interface, which is only displayed on products that support the scheduling policy
Wrr queue bandwidth	Indicates the WRR queue weight, which is only displayed on products that support the scheduling policy
Drr queue bandwidth	Indicates the DRR queue weight, which is only displayed on products that support the scheduling policy
Wfq queue bandwidth	Indicates the WFQ queue weight, which is only displayed on products that support the scheduling policy

The following example displays the QoS configuration of all interfaces.

```
Ruijie# show mls qos interface policers
```

```
Interface: GigabitEthernet 0/1
Attached input  policy-map: pmap1
Attached output policy-map: pmap1
Interface: GigabitEthernet 0/2
Attached input  policy-map: p1
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

2.27 show mls qos maps

Use this command to display DSCP-CoS mapping and CoS-DSCP mapping.

show mls qos maps [**cos-dscp** | **dscp-cos**]

Parameter Description	Parameter	Description
	cos-dscp	Displays the CoS-DSCP mapping.
	dscp-cos	Displays the DSCP-CoS mapping.

Defaults None

Command Mode Privileged EXEC mode, global configuration mode, interface configuration mode.

Usage Guide N/A

Configuration Examples The following example displays the CoS-DSCP mapping.

```
Ruijie# show mls qos maps cos-dscp
cos dscp
--- ----
0   0
1   8
2   16
3   24
4   32
5   40
6   48
7   56
```

The fields in the output of this command are described in the following table.

Field	Description
cos	Indicates the CoS value.
dscp	Indicates the DSCP value mapped .

The following example displays the DSCP- CoS mapping.

```
Ruijie# show mls qos maps dscp-cos
dscp cos     dscp cos     dscp cos     dscp cos
---- ---     ---- ---     ---- ---     ---- ---
 0   0        1   0        2   0        3   0
 4   0        5   0        6   0        7   0
 8   1        9   1       10   1       11   1
12   1       13   1       14   1       15   1
16   2       17   2       18   2       19   2
20   2       21   2       22   2       23   2
24   3       25   3       26   3       27   3
28   3       29   3       30   3       31   3
32   4       33   4       34   4       35   4
36   4       37   4       38   4       39   4
40   5       41   5       42   5       43   5
44   5       45   5       46   5       47   5
48   6       49   6       50   6       51   6
52   6       53   6       54   6       55   6
56   7       57   7       58   7       59   7
60   7       61   7       62   7       63   7
```

The fields in the output of this command are described in the following table.

Field	Description
dscp	Indicates the DSCP value.
cos	Indicates the CoS value mapped .

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.28 show mls qos queueing

Use this command to display the QoS queuing configuration.

show mls qos queueing

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode, global configuration mode, interface configuration mode.

Usage Guide N/A

Configuration Examples The following example displays the QoS queuing configuration.

```
Ruijie# show mls qos queueing
Cos-queue map:
cos qid
--- ---
0   1
1   2
2   3
3   4
4   5
5   6
6   7
7   8

wrr bandwidth weights:
qid weights
--- -------
1   1
2   2
3   3
4   4
5   5
6   6
7   7
8   8

drr bandwidth weights:
qid weights
--- -------
1   3
2   3
3   3
4   3
5   3
6   3
7   3
8   3

wfq bandwidth weights:
```

```
qid weights
--- -------
1   3
2   4
3   5
4   6
5   7
6   8
7   9
8   10

Interface: GigabitEthernet 0/1
Wrr queue bandwidth: 1 1 1 1 2 2 2 2
Drr queue bandwidth: 1 1 2 2 2 2 4 4
Wfq queue bandwidth: 1 1 2 2 4 4 4 4
```

The fields in the output of this command are described in the following table.

Field	Description
Cos-queue map	Indicates the mapping between the CoS value and the queue ID.
wrr bandwidth weights	Indicates the WRR queue weight.
drr bandwidth weights	Indicates the DRR queue weight.
wfq bandwidth weights	Indicates the WFQ queue weight.
cos	Indicates the CoS value.
qid	Indicates the queue ID.
weights	Indicates the weight value
Interface	Indicate the interface name, which is only displayed on products that support the scheduling policy
Wrr queue bandwidth	Indicates the WRR queue weight, which is only displayed on products that support the scheduling policy
Drr queue bandwidth	Indicates the DRR queue weight, which is only displayed on products that support the scheduling policy
Wfq queue bandwidth	Indicates the WFQ queue weight, which is only displayed on products that support the scheduling policy

Related Commands

Command	Description
N/A	N/A

Platform N/A

Description

2.29 show mls qos rate-limit

Use this command to display the rate limiting configuration of the interface.

show mls qos rate-limit [**interface** *interface-id*]

Parameter Description

Parameter	Description
interface-id	Interface name

Defaults N/A

Command Mode Privileged EXEC mode, global configuration mode, interface configuration mode.

Usage Guide N/A

Configuration Examples The following example displays the rate limiting configuration of all interfaces.

```
Ruijie# show mls qos rate-limit
Interface: GigabitEthernet 0/1
  rate limit input Kbps = 10240 burst = 256
Interface: GigabitEthernet 0/3
  rate limit output Kbps = 102400 burst = 4096
```

The fields in the output of this command are described in the following table.

Field	Description
Interface	Indicates the interface name.
rate limit input Kbps = x burst = y	Indicates the input rate limit value, and the input burst traffic limit value.
rate limit output Kbps = x burst = y	Indicates the output rate limit value, and the output burst traffic limit value.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.30 show mls qos scheduler

Use this command to display the queue scheduling policy.

show mls qos scheduler

Parameter Description

Parameter	Description
N/A	N/A

Defaults None

Command Mode Privileged EXEC mode, global configuration mode, interface configuration mode.

Usage Guide N/A

Configuration Examples The following example displays the queue scheduling policy.

```
Ruijie# show mls qos scheduler
Global Multi-Layer Switching scheduling
 Weighted Round Robin
```

The fields in the output of this command are described in the following table.

Field	Description
Weighted Round Robin	Indicates that the queue scheduling policy is WRR. The other queue scheduling policies are listed as follows: SP: Strict Priority RR: Round Robin DRR: Deficit Round Robin WFQ: Weighted Fair Queue

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.31 show mls qos virtual-group

Use this command to display the policy map configuration on the virtual group.

show mls qos virtual-group [*virtual-group-number* | **policers**]

Parameter Description

Parameter	Description
virtual-group-number	Virtual group number. The range is from 1 to 128.
policers	Displays the policy map configuration on all virtual groups.

Defaults None

Command Mode Privileged EXEC mode, global configuration mode, interface configuration mode.

Usage Guide N/A

Configuration Examples The following example displays the policy map configuration on all virtual groups.

```
Ruijie# show mls qos virtual-group policers
Virtual-group: 1
Attached input policy-map: pmap1
Virtual-group: 20
Attached output policy-map: pmap2
```

The fields in the output of this command are described in the following table.

Field	Description
Virtual-group	Indicates the virtual group number.
Attached input policy-map	Indicates the policy map applied on the input virtual group.
Attached output policy-map	Indicates the policy map applied on the output virtual group.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.32 show policy-map

Use this command to display policy maps.

show policy-map [*policy-map-name* [**class** *class-map-name*]]

Parameter Description

Parameter	Description
policy-map-name	Policy map name
class-map-name	Class map name

Defaults None

Command Mode Privileged EXEC mode, global configuration mode, interface configuration mode.

Usage Guide N/A

Configuration The following example displays configuration of policy map “pmap1”.

Examples

```
Ruijie# show policy-map pmap1

 Policy Map pmap1
   Class cmap1
     set ip dscp 16
   Class cmap2
     police 10240 256 exceed-action dscp 8
   Class cmap3
     police 512000 4096 exceed-action drop
```

The fields in the output of this command are described in the following table.

Field	Description
Policy Map	Indicates the policy map name.
Class	Indicates the class map name.
set	Indicates that the CoS, DSCP and VID values are modified in this example.
police	Indicates bandwidth limit configuration and the action policy for the violated packets.

The following example displays the action policy for the traffic of class map “cmap1” in policy map “pmap1” .

```
Ruijie#show policy-map pmap1 class cmap1
Class cmap1
set ip dscp 16
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.33 show qos bandwidth

Use this command to display the bandwidth configuration.

show qos bandwidth [**interfaces** *interface-id*]

Parameter Description

Parameter	Description
interface-id	Interface name

Defaults None

Command Privileged EXEC mode, global configuration mode, interface configuration mode.

Mode

Usage Guide N/A

Configuration Examples The following example displays the bandwidth configuration of interface GigabitEthernet 0/1. (Taking the device supporting the bandwidth configuration of the unicast queue or the multicast queue for example.)

```
Ruijie# show qos bandwidth interface gigabitEthernet 0/1

Interface: GigabitEthernet 0/1
 ---------------------------------------------------
 uc-queue-id | minimum-bandwidth | maximum-bandwidth
 -----------   -----------------   -----------------
          1              5120             10240
          2                 0                 0
          3                 0                 0
          4                 0                 0
          5                 0                 0
          6                 0                 0
          7                 0                 0
          8                 0                 0
 ---------------------------------------------------
 Total ucast-queue minimum-bandwidth:          5120
 Total ucast-queue maximum-bandwidth:         10240

Interface: GigabitEthernet 0/1
 ---------------------------------------------------
 mc-queue-id | minimum-bandwidth | maximum-bandwidth
 -----------   -----------------   -----------------
          1              1024              5120
          2                 0                 0
          3                 0                 0
          4                 0              2048
 ---------------------------------------------------
 Total mcast-queue minimum-bandwidth:          1024
Total mcast-queue maximum-bandwidth:          5120
```

The fields in the output of this command are described in the following table.

Field	Description
Interface	Indicates the interface name.
queue-id	Indicates the queue ID.
uc-queue-id	Indicates the unicast queue ID.
mc-queue-id	Indicates the multicast queue ID.
minimum-bandwidth	Indicates the minimum bandwidth configuration.

	The unit is Kbps.
maximum-bandwidth	Indicates the maximum bandwidth configuration. The unit is Kbps.
Total queue minimum-bandwidth Total queue maximum-bandwidth	Indicates the total bandwidth of minimum and maximum when both unicast and multicast queues are displayed.
Total ucast-queue minimum-bandwidth Total ucast-queue maximum-bandwidth	Indicates the total bandwidth of minimum and maximum when only unicast queue is displayed.
Total mcast-queue minimum-bandwidth Total mcast-queue maximum-bandwidth	Indicates the total bandwidth of minimum and maximum when only multicast queue is displayed.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.34 show qos wred-ecn statistics

Use this command to display the statistics of packets discarded by WRED and packets marked by ECN.

show qos wred-ecn statistics [**interfaces** *interface-id*]

Parameter Description

Parameter	Description
interface-id	Interface ID

Defaults N/A

Command mode Privileged EXEC mode/global configuration mode/interface configuration mode

Usage Guide The chip capability depends whether this command is available.

Configuration Examples The following example displays the statistics of packets discarded by WRED and packets marked by ECN.

Products do not support port queue statistics display:

```
Ruijie#show qos wred-ecn statistics
Wred ecn stats result:
Port                            WredDropped       EcnSended
```

```
-------------------------------------------------------------------
TFGigabitEthernet 0/1            0                0
TFGigabitEthernet 0/2            0                0
TFGigabitEthernet 0/3            0                0
TFGigabitEthernet 0/4            0                0
TFGigabitEthernet 0/5            0                0
TFGigabitEthernet 0/6            0                0
TFGigabitEthernet 0/7            0                0
TFGigabitEthernet 0/8            0                0
TFGigabitEthernet 0/9            0                0
TFGigabitEthernet 0/10           0                0
TFGigabitEthernet 0/11           0                0
TFGigabitEthernet 0/12           0                0
```

Products support port queue statistics display:

```
Ruijie#show qos wred-ecn statistics
Wred ecn stats result:
port                          WredDropped      EcnSended
-------------------------------------------------------------------
GigabitEthernet 0/3           10               15
    Queue 1:                  1                2
    Queue 2:                  1                2
    Queue 3:                  1                2
    Queue 4:                  1                2
    Queue 5:                  1                2
    Queue 6:                  1                2
    Queue 7:                  1                2
    Queue 8:                  3                1
TenGigabitEthernet 0/32       10               15
    Queue 1:                  1                2
    Queue 2:                  1                2
    Queue 3:                  1                2
    Queue 4:                  1                2
    Queue 5:                  1                2
    Queue 6:                  1                2
    Queue 7:                  1                2
    Queue 8:                  3                1
```

The fields in the output of this command are described in the following table:

Port	Port name
WredDropped	Number of packets discarded by WRED
EcnSended	Number of packets marked by ECN
Queue	The ECN statistics of port queue is equal to the ECN statistics of port.

	Queue range: 1-8

Related Commands

Command	Description
N/A.	N/A.

Platform Description N/A.

2.35 show queueing wred interface

Use this command to display WRED settings on the interface.

show queueing wred interface *interface-id*

Parameter Description

Parameter	Description
interface-id	Interface name

Defaults None

Command mode Privileged EXEC mode, global configuration mode, interface configuration mode.

Usage Guide Products depend whether max_cell x and min_cell_x are displayed.

Configuration Examples The following example displays the WRED settings on interface GigabitEthernet 1/3.

```
Ruijie# show queueing wred interface gigabitethernet 1/3
---  --------- ---------- ----- ----- ------  --------- ---------- ----- ----- ------
qid  max_cell_1 min_cell 1 max_1 min_1 prob_1 max_cell_2 min_cell 2  max_2 min_2 prob_2
---  --------- ---------- ----- ----- ------  --------- ---------- ----- ----- ------
1    120000      120000    100   30    100    120000      120000     100   70    100
2    120000      120000    100   60    100    120000      120000     100   30    100
3    120000      120000    100   80    30     120000      120000     100   30    40
4    120000      120000    100   80    100    120000      120000     100   100   100
5    120000      120000    100   80    100    120000      120000     100   100   100
6    120000      120000    100   80    100    120000      120000     100   100   100
7    120000      120000    100   80    100    120000      120000     100   100   100
8    120000      120000    100   80    100    120000      120000     100   100   100



---  ---  ------------
cos  qid  threshold_id
```

```
---  ---  ------------
0    1    1
1    2    2
2    3    2
3    4    2
4    5    2
5    6    1
6    7    1
7    8    1
```

The fields in the output of this command are described in the following table.

Field	Description
qid	Indicates the queue ID.
max_cell_x	Indicates the upper threshold of the x group (unit: cell).
min_cell_x	Indicates the lower threshold of the x group (unit: cell).
max_x	Indicates the higher threshold of the x group (unit: percentage).
min_x	Indicates the higher threshold of the x group (unit: percentage).
prob_x	Indicates the maximum probability of being dropped of the x group.
cos qid threshold_id	Indicates the mapping of CoS value, queue ID and threshold number.

Related Commands

Command	Description
N/A.	N/A.

Platform Description N/A.

2.36 show virtual-group

Use this command to display the member port in the virtual group.

show virtual-group [*virtual-group-number* | **summary**]

Parameter Description

Parameter	Description
virtual-group-number	Virtual group number. The range is from 1 to 128.
summary	Displays the member port in all virtual groups.

Defaults N/A

Command Mode Privileged EXEC mode, global configuration mode, interface configuration mode.

Usage Guide N/A

Configuration Examples The following example displays the member port in all virtual groups.

```
Ruijie# show virtual-group summary
  virtual-group       member
  -------------       -------------------------
  1                 Gi0/1 Gi0/2
  2                 Gi0/0
```

The fields in the output of this command are described in the following table.

Field	Description
virtual-group	Indicates the virtual group number.
member	Indicates the member port in the virtual group.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.37 virtual-group

Use this command to create a virtual group in global configuration mode.
Use this command to configure add an interface to a virtual group in interface configuration mode.
Use the **no** or **default** form of this command to remove a virtual group in global configuration mode.
Use the **no** or **default** form of this command to remove an interface from a virtual group in interface configuration mode.
virtual-group *virtual-group-number*
no virtual-group *virtual-group-number*
default virtual-group *virtual-group-number*

Parameter Description

Parameter	Description
virtual-group-number	Virtual group number. The range is from 1 to 128.

Defaults No virtual group is configured, or no interface is added to a virtual group, by default.

Command Mode Interface configuration mode, global configuration mode.

Usage Guide The member port added to the virtual group must be a physical port or an aggregate port member. The member ports of a virtual group must be on the same module of a chassis switch or on the same box switch.

Configuration Examples The following example sets the interface gigabitEthernet 1/3 as the member of virtual group 3:

```
Ruijie(config)# interface gigabitethernet 1/3
Ruijie(config-if)# virtual-group 3
```

Related Commands

Command	Description
show virtual-group [*virtual-group-number* | **summary**]	Displays the virtual group configuration.

Platform Description N/A

2.38 wfq-queue bandwidth

Use this command to configure the WFQ queue weight ratio. Use the **no** or **default** form of this command to restore the default setting.

wfq-queue bandwidth *weight1 ... weight8*

no wfq-queue bandwidth

default wfq-queue bandwidth

Parameter Description

Parameter	Description
weight1...weight8	8 queue weights. The default queue weight ratio is 1:1:1:1:1:1:1:1. For the products supporting the SP scheduling policy, the weight range is from 0 to 15. For the products not supporting the SP scheduling policy, the weight range is from 1 to 15.

Defaults The default queue weight ratio is 1:1:1:1:1:1:1:1.

Command Mode Global configuration mode.

Usage Guide If the weight value is 0, the SP scheduling policy is applied.

Configuration Examples The following example configures the WFQ queue weight ratio to 1:1:2:4:4:4:6:8.

```
Ruijie(config)# wfq-queue bandwidth 1 1 2 4 4 4 6 8
```

Related Commands

Command	Description

show mls qos queueing [**interface** *interface-id*]	Displays the QOS queuing configuration.

Platform Description N/A

2.39 wrr-queue bandwidth

Use this command to set the WRR weight ratio. Use the **no** or **default** form of this command to restore the default setting.

wrr-queue bandwidth *weight1 ... weight8*

no wrr-queue bandwidth

default wrr-queue bandwidth

Parameter Description

Parameter	Description
weight1...weight8	8 queue weights. The default queue weight ratio is 1:1:1:1:1:1:1:1. For the products supporting the SP scheduling policy, the weight range is from 0 to 15. For the products not supporting the SP scheduling policy, the weight range is from 1 to 15.

Defaults The default queue weight ratio is 1:1:1:1:1:1:1:1.

Command Mode Global configuration mode

Usage Guide If the weight value is 0, the SP scheduling policy is applied.

Configuration Examples The following example configures the WRR queue weight ratio to 1:1:1:1:2:2:4:8.

```
Ruijie(config)# wrr-queue bandwidth 1 2 3 4 5 6 7 8
```

Related Commands

Command	Description
show mls qos queuing [**interface** *interface-id*]	Displays the QoS queuing configuration.

Platform Description N/A

2.40 cos-map

Use this command to map the CoS value to a threshold for a specified queue. Use the **no** or **default** form of this command to restore the default settings.

wrr-queue cos-map *threshold_id cos1* [*cos2* [*cos3* [*cos4* [*cos5* [*cos6* [*cos7* [*cos8*]]]]]]]

no wrr-queue cos-map *threshold_id*
default wrr-queue cos-map *threshold_id*

Parameter Description

Parameter	Description
threshold_id	Threshold number. The range is from 1 to 2. Up to two threshold values can be configured.
cos_N	CoS value. The range is from 0 to 7. Up to 8 CoS values can be configured.

Defaults All CoS values are mapped to the threshold 1.

Command mode Interface configuration mode.

Usage Guide DSCP-threshold mapping can be enabled by mapping DSCP-CoS to CoS-threshold.
When all CoS values are mapped to one threshold on the interface, it changes the enabled WRED to RED.

Configuration Examples The following example enters the interface GigabitEthernet 1/3 to map CoS 1, 2 to threshold 2.

```
Ruijie(config)# interface gigabitethernet 1/3
Ruijie(config-if-GigabitEthernet 1/3)#wrr-queue cos-map 2 1 6
```

Related Commands

Command	Description
show queueing wred interface *interface-id*	Displays the WRED configuration on the interface.

Platform Description N/A.

2.41 wrr-queue random-detect sample-period

Use this command to configure the sampling interval for discarding of WRED. Youn can also restore the default configuration .
wrr-queue random-detect sample-period *period*
no wrr-queue random-detect sample-period
default wrr-queue random-detect sample-period

Parameter Description

Parameter	Description
period	Indicates the sampling interval in the unit of sampling cycle, ranging from 1 to 64.

Defaults The default range varies with product.

Command Mode Global configuration mode

Usage Guide Whether this command is available is determined by products.

Because the configured sampling interval takes effect on the discarding function of WRED in interface configuration mode, it is recommended to configure the sampling interval after the higher and lower thresholds for packets to be discarded by WRED. Use this command together with the sampling weight configuration command for packets to be discarded by WRED, to precisely adjust the discarding function of WRED.

Configuration Examples The following example sets the sampling interval to 10.

```
Ruijie# configure terminal
Ruijie(config)# wrr-queue random-detect sample-period 10
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2.42 wrr-queue random-detect sample-weigth

Use this command to set the sampling weight for WRED. Use the **no** or **default** form of this command to restore the default settings.

wrr-queue random-detect sample-weight *queue_id weigth*

no wrr-queue random-detect sample-weight *queue_id*

default wrr-queue random-detect sample-weight *queue_id*

Parameter Description

Parameter	Description
queue_id	Indicates the ID of a queue on an interface.
weigth	Indicates the weight factor, ranging from 0 to 15. The value range may vary with products.

Defaults The default value is determined by products.

Command mode Interface configuration mode.

Usage Guide Whether this command is available is determined by products.

Because the configured sampling interval takes effect on the discarding function of WRED in interface

configuration mode, it is recommended to configure the sampling interval after the higher and lower thresholds for packets to be discarded by WRED. Use this command together with the sampling interval configuration command for packets to be discarded by WRED, to precisely adjust the discarding function of WRED.

Configuration Examples The following example sets the sampling weight on interface 1/3 to 6:

```
Ruijie(config)# interface gigabitethernet 1/3
Ruijie(config-if-GigabitEthernet 1/3)# wrr-queue random-detect sample-weigth 1 6
```

Related Commands

Command	Description
N/A.	N/A.

Platform Description N/A.

2.43 wrr-queue random-detect min-threshold

Use this command to configure the minimum WRED drop threshold. Use the **no** or **default** form of this command to restore the default WRED drop threshold. Unit: percentage

wrr-queue random-detect min-threshold *queue_id thr1* [*thr2*]

no wrr-queue random-detect min-threshold *queue_id*

default wrr-queue random-detect min-threshold *queue_id*

Parameter Description

Parameter	Description
queue_id	Queue ID.
thrN	Up to two threshold values can be configured. The threshold value range is from 1 to 100.

Defaults Two threshold values are configured, and the default threshold values are 100 and 80.

Command mode Interface configuration mode.

Usage Guide As the maximum value of the configuration range is equal to the current higher threshold, you need to pay attention to the setting of the higher threshold when configuring the lower threshold.

The threshold for packets to be discarded by WRED can be configured in the unit of percentage or cell. The latter configured mode prevails.

Configuration Examples The following example configures the low WRED drop thresholds to 60 and 70 for queue 1.

```
Ruijie(config)# interface gigabitethernet 1/3
```

```
Ruijie(config-if-GigabitEthernet 1/3)# wrr-queuerandom-detect min-threshold
1 60 70
```

Related Commands

Command	Description
show queueing wred interface *interface-id*	Displays the WRED configuration on the interface.

Platform Description N/A.

2.44 wrr-queue random-detect max-threshold

Use this command to set the maximum WRED threshold (in the unit of percentage) for the specified queue on the interface. Use the **no** form of this command to remove the maximum WRED threshold.
wrr-queue random-detect max-threshold *queue_id thr1* [*thr2 thr3*]
no wrr-queue random-detect max-threshold *queue_id*

Parameter Description

Parameter	Description
queue_id	The interface queue id.
thrN	Supports 2 groups of higher thresholds, ranging from the specified lower threshold to 100.

Defaults When the unit is percentage, the default value is 100, 100.

Command mode Interface configuration mode.

Usage Guide Because the minimum value of the configured range is equal to the current lower threshold, you need to consider the lower threshold when configuring the higher threshold.
The threshold for packets to be discarded by WRED can be configured in the unit of percentage or cell. The latter configured mode prevails.

Configuration Examples The following example shows how to set the max-threshold for queue1 on an interface:

```
Ruijie(config-if)# wrr-queuerandom-detect max-threshold 1 88 89 90
```

Related Commands

Command	Description
N/A.	N/A.

Platform N/A.

Description

2.45 wrr-queue random-detect min-threshold cell

Use this command to set the lower WRED threshold in the unit of cell. Use the **no** or **default** form of this command to restore the default settings.

wrr-queue random-detect min-threshold cell *queue_id thr1* [*thr2*]

no wrr-queue random-detect min-threshold cell *queue_id*

default wrr-queue random-detect min-threshold cell *queue_id*

Parameter Description

Parameter	Description
queue_id	Indicates the ID of a queue on an interface, ranging from **1** to **8**.
thrN	Supports 2 groups of lower thresholds, ranging from 1 to the specified higher threshold. The default value is determined by products.

Defaults The default value is determined by products.

Command mode Interface configuration mode.

Usage Guide Whether this command is available is determined by products.

Because the maximum value of the configuration range is equal to the current higher threshold, you need to pay attention to the setting of the higher threshold when configuring the lower threshold.

The threshold for packets to be discarded by WRED can be configured in the unit of percentage or cell. The latter configured mode prevails.

Configuration Examples The following example sets the lower threshold of the first queue on interface 1/3 to1000,1000 :

```
Ruijie(config)# interface gigabitethernet 1/3
Ruijie(config-if-GigabitEthernet 1/3)# wrr-queue random-detect cell min-threshold 1 1000 1000
```

Related Commands

Command	Description
N/A.	N/A.

Platform Description N/A.

2.46 wrr-queue random-detect max-threshold cell

Use this command to set the higher WRED threshold in the unit of cell. Use the **no** or **default** form of this command to restore the default settings.

wrr-queue random-detect max-threshold cell *queue_id thr1* [*thr2*]

no wrr-queue random-detect max-threshold cell *queue_id*

default wrr-queue random-detect max-threshold cell *queue_id*

Parameter Description

Parameter	Description
queue_id	Indicates the ID of a queue on an interface.
thrN	Supports 2 groups of higher thresholds, ranging from the set lower threshold to the maximum higher threshold.

Defaults The default value is determined by products.

Command mode Interface configuration mode.

Usage Guide Whether this command is available is determined by products.

Because the minimum value of the configuration range is equal to the current lower threshold, you need to consider the lower threshold when configuring the higher threshold.

The threshold for packets to be discarded by WRED can be configured in the unit of percentage or cell. The latter configured mode prevails.

Configuration Examples The following example sets the higher threshold of the first queue on interface 0/1 to1000,1000 :

```
Ruijie(config)# interface tfGigabitEthernet 0/1
Ruijie(config-if-TFGigabitEthernet 0/1)# wrr-queue random-detect cell max-threshold 1 1000 1000
```

Related Commands

Command	Description
N/A.	N/A.

Platform Description N/A.

2.47 wrr-queue random-detect probability

Use this command to configure the WRED packet drop probability. Use the **no** or **default** form of this command to restore the WRED packet drop probability.

wrr-queue random-detect probability *queue_id prob1* [*prob2*]

no wrr-queue random-detect probability *queue_id*
default wrr-queue random-detect probability *queue_id*

Parameter Description

Parameter	Description
queue_id	Queue ID.
proN	Up to two probability values can be configured. The threshold value range is from 1 to 100.

Defaults Two packet drop probability values are configured, and the default probability values are 100 and 80.

Command mode Interface configuration mode.

Usage Guide N/A

Configuration Examples The following example configures the WRED packet drop values to 50 and 70 for queue 1.

```
Ruijie(config)# interface gigabitethernet 1/3
Ruijie(config-if-GigabitEthernet 1/3)# wrr-queue random-detect probability 1
50 70
```

Related Commands

Command	Description
show queueing wred interface *interface-id*	Displays the WRED configuration on the interface.

Platform Description N/A.

3 MMU Commands

3.1 clear mmu pg-buffer peaked

Use this command to clear the historical peak value of the priority group buffer.

clear mmu pg-buffer peaked

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide -

Configuration Examples The following example clears the historical peak value of all priority group buffers:

```
Ruijie# clear mmu pg-buffer peaked
```

3.2 clear mmu queue-buffer peaked

Use this command to clear the historical peak value of the queue buffer.

clear mmu queue-buffer peaked

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example clears the historical peak value of the buffer.

```
Ruijie# clear mmu queue-buffer peaked
Ruijie#
```

Platform Description N/A

3.3 clear queue-counters

Use this command to clear queue statistics.

clear queue-counter [**interface** *interface _id*]

Parameter Description

Parameter	Description
interface_id	Port Number

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example clears all queue statistics.

```
Ruijie# clear queue-counter
Ruijie#
```

The following example clears queue statistics of an interface.

```
Ruijie# clear queue-counter Interface TenGigabitEthernet 1/9
Ruijie#
```

Platform Description N/A

3.4 clear mmu usage-warn-count

Use this command to clear the number of buffer usage warnings.

clear mmu usage-warn-count

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example clears the number of buffer usage warnings.

```
Ruijie# clear mmu usage-warn-count
```

3.5 mmu cut-through

Use this command to enable the cut-through function on a port. Use the **no** form of this command to restore the default setting.

mmu cut-through

no mmu cut-through

Parameter Description

Parameter	Description
N/A	N/A

Defaults The default value depends on the product.

Command Mode Interface configuration mode

Default Level 14

Usage Guide

1. The effective way of this command varies with the equipment and depends on the product.
2. The user-configured value is displayed when the **show run** command is executed, even if the user-configured value is the default value.

Configuration Examples The following example enables the cut-through function on a port.

```
Ruijie#config
Ruijie(config)# interface hundredGigabitEthernet 0/50
Ruijie(config-if-HundredGigabitEthernet 0/50)#mmu cut-through
Ruijie(config-if-HundredGigabitEthernet 0/50)#exit
```

Verification Run the **show run** command to display the cut-through configuration.

3.6 mmu guarantee-limit set

Use this command to ensure the quantity of guaranteed buffer cell. Use the **no** form of this command to

disable this function.

mmu guarantee-limit set *cell*

no mmu guarantee-limit

Parameter Description

Parameter	Description
cell	ensure the quantity of guaranteed buffer cell

Command Mode Global configuration mode

Default Level 14

Usage Guide Certain buffer is reserved by default, and the cell quantity is subject to the actual product.

Configuration Examples 1: In the global configuration mode, reserve 10000 guaranteed cells.

```
Ruijie#config
Ruijie(config)# mmu guarantee-limit set 10000
Ruijie(config)#exit
Ruijie#
```

Verification 1: Run the **show run** command to check the current configuration.

3.7 mmu ha disable

Use this command to enable MMU-HA function. Use the no form of this command to disable this function.

mmu ha disable

no mmu ha disable

Parameter Description

Parameter	Description

Command Mode Global configuration mode

Default Level 14

Usage Guide MMU-HA is enabled by default.

Configuration Examples 1: In the global configuration mode, disable MMU-HA.

```
Ruijie#config
```

```
Ruijie(config)# mmu ha disable
Ruijie(config)#exit
Ruijie#
```

Verification 1: Run the **show run** command to check the current configuration.

3.8 mmu ha reset disable

Use this command to enable MMU-HA reset. Use the **no** form of this command to disable this function.

mmu ha reset disable

no mmu ha reset disable

Parameter Description

Parameter	Description

Command Mode Global configuration mode

Default Level 14

Usage Guide MMU-HA reset is enabled by default.

Configuration Examples 1: In the global configuration mode, disable MMU-HA reset.

```
Ruijie#config
Ruijie(config)# mmu ha reset disable
Ruijie(config)#exit
Ruijie#
```

Verification 1: Run the **show run** command to check the current configuration.

3.9 mmu headroom-threshold

Use this command to configure the priority group headroom buffer size. Use the **no** form of this command to restore the default setting.

mmu headroom-threshold pg [*pg-id0* [*pg-id1* [*pg-id N*]] **set** *value*

no mmu headroom-threshold pg

Parameter Description

Parameter	**Description**
pg-idN	Priority group ID

value	Headroom threshold value, in the unit of cell.

Defaults The default value depends on the product.

Command Mode Interface configuration mode

Default Level 14

Usage Guide
1. The effective way of this command varies with the equipment and depends on the product.
2. The user-configured value is displayed when the **show run** command is executed, even if the user-configured value is the default value.

Configuration Examples The following example configures the priority group headroom buffer size.

```
Ruijie#config
Ruijie(config)# interface tenGigabitEthernet 0/9
Ruijie(config-if)#mmu headroom-threshold pg 1 3 7 8 set 100
Ruijie(config-if)#exit
```

Verification Run the **show run** command to display the headroom buffer size configuration.

3.10 mmu ingress-threshold

Use this command to configure the ingress shared buffer. Use **no** form of this command to restore the default setting.

mmu ingress-threshold pg [*pg-id0* [*pg-id1* [*pg-id N*]] **set** *thr%*

no mmu ingress-threshold pg

Parameter Description

Parameter	Description
pg-idN	Priority group ID
th%	Total shared buffer x Threshold percentage = Maximum available buffer for the queue

Defaults The default value depends on the product.

Command Mode Interface configuration mode

Default Level 14

Usage Guide
1. The effective way of this command varies with the equipment and depends on the product.
2. The configuration takes effect only when flow control/Priority-based Flow Control (PFC) is not

enabled.

3. The user-configured value is displayed when the **show run** command is executed, even if the user-configured value is the default value.

Configuration Examples The following example configures the percentage of multi-priority group shared buffer.

```
Ruijie#config
Ruijie(config)# interface tenGigabitEthernet 0/9
Ruijie(config-if)#mmu ingress-threshold pg 1 3 7 8 set 80
Ruijie(config-if)#exit
```

Verification Run the **show run** command to display the shared buffer configuration.

3.11 mmu {ingress|egress} service-pool

Use this command to configure the size of shared service pool on the input/output. Use the **no** form of this command to disable this function.

mmu {*ingress*|*egress***} service-pool** *sp-id* **set** *cell*

no mmu {ingress|egress} service-pool *sp-id*

Parameter Description

Parameter	Description
ingress	Configures the shared service pool on the input
egress	Configures the shared service pool on the output
sp-id	ID of the shared service pool
cell	Cell quantity of the shared service pool

Command Mode Global configuration mode

Default Level 14

Usage Guide By default, buffer is all allocated to the shared service pool sp0 whose size is subject to the actual product. The size of other pools is 0.

It is recommended to set the same size for shared service pools on the input/output for the same traffic, or packet loss may occur.

Configuration Examples 1: sp1 on the input/output in the global configuration mode has 10000 cells

```
Ruijie#config
Ruijie(config)# mmu ingress service-pool 1 set 10000
Ruijie(config)# mmu egress service-pool 1 set 10000
Ruijie(config)#exit
Ruijie#
```

Verification 1: Run the **show run** command to check the current configuration.
2: Run the **show pg-buffer** and **show queue-buffer** to check the configuration result.

3.12 mmu pg-guarantee

Use this command to configure the ingress PG guarantee buffer size. Use the **no** form of this command to restore the default setting.

mmu pg-guarantee pg { *priority -id1* [*priority-id2* [*priority -idN*] } *set value*

no mmu pg-guarantee pg { *priority -id1* [*priority-id2* [*priority -idN*] }

Parameter Description

Parameter	Description
priority -idN	Ingress PG No.
value	Guarantee buffer configuration value, in the unit of cell

Defaults The default value depends on the product.

Command Mode Interface configuration mode

Default Level 14

Usage Guide
1. The effective way of this command varies with the equipment and depends on the product.
2. The user-configured value is displayed when the **show run** command is executed, even if the user-configured value is the default value.

Configuration Examples The following example configures the ingress PG guarantee buffer size.

```
Ruijie#config
Ruijie(config)# interface hundredGigabitEthernet 0/50
Ruijie(config-if-HundredGigabitEthernet 0/50)#mmu pg-guarantee pg set 100
Ruijie(config-if-HundredGigabitEthernet 0/50)#exit
```

Verification Run the **show run** command to display the PG guarantee buffer configuration.

3.13 mmu pg-headroom

Use this command the maximum size of globally available headroom buffer. Use the **no** form of this command to restore the default setting.

mmu pg-headroom set *value*

no mmu pg-headroom

Parameter Description

Parameter	Description

value	Maximum size of globally available headroom buffer, in the unit of cell

Defaults The default value depends on the product.

Command Mode Global configuration mode

Default Level 14

Usage Guide The default value of the global PG headroom buffer varies with the equipment and depends on the product.

Configuration Examples The following example configures the maximum size of globally available headroom buffer.

```
Ruijie#config
Ruijie(config)#mmu pg-headroom set 10000
Ruijie(config)#exit
```

Verification Run the **show run** command to display the global headroom buffer configuration.

3.14 mmu {priority-group| unicast-queue| multicast-queue} attach

Use this command to configure the mapping relationship between the input PG/output queue and the shared service pool. Use the **no** form of this command to disable this function.

mmu {priority-group| unicast-queue| multicast-queue} [*id1* [*id2* [*idN*]**] attach service-pool [***sp-id]***

no mmu {priority-group| unicast-queue| multicast-queue} [*id1* [*id2* [*idN*]**] attach service-pool**

Parameter Description

Parameter	Description
priority-group	Input priority group
unicast-queue	Output unicast queue
multicast-queue	Output multicast queue
idN	ID of the priority group or unicast/multicast queue
sp-id	ID of the shared service pool

Command Mode Global configuration mode

Default Level 14

Usage Guide By default, PG and unicast/multicast queue are mapped to SP0. The mapping can be changed to a new SP, and is changed back to SP0 after the configuration is deleted,

Configuration Examples 1: In the global configuration mode, establish SP1 on the input, and establish SP1 and SP2 on the output. Map the input PG1 to the input SP1, the unicast queue 1 on the output to the output SP1, and the

multicast queue 1 to the output SP2.

```
Ruijie#config
Ruijie(config)# mmu ingress service-pool 1 set 10000
Ruijie(config)# mmu egress service-pool 1 set 10000
Ruijie(config)# mmu egress service-pool 2 set 10000
Ruijie(config)# mmu priority-group 1 attach service-pool 1
Ruijie(config)# mmu unicast-queue 1 attach service-pool 1
Ruijie(config)# mmu multicast-queue 1 attach service-pool 2
Ruijie(config)#exit
Ruijie#
```

Verification 1: Run the **show run** command to check the current configuration.
2: Run the **show pg-buffer** and **queue-buffer** to check the configuration result.

3.15 mmu queue-guarantee

Use this command to configure the guaranteed buffer.
mmu queue-guarantee output { **unicast | multicast** } {*queue-id1* [*queue-id2* [*queue-idN*] }**set** *value*

Use the **no** form of this command to restore the default setting.
no mmu queue-guarantee output { **unicast | multicast** }

Parameter Description

Parameter	Description
output	Performs buffer management on the output queue.
unicast	Performs buffer management on the output unicast queue.
multicast	Performs buffer management on the output multicast queue.
queue-idN	Queue ID
value	Sets the number of guaranteed buffer, in the unit of cells.

Defaults 8 cells by default.

Command Mode Interface configuration mode

Default Level 14

Usage Guide This command is executed in different ways on different devices.

Configuration Examples The following example configures guaranteed buffer for unicast queue.

```
Ruijie#config

Ruijie(config)# interface tenGigabitEthernet 1/9
```

```
Ruijie(config-if)#mmu queue-guarantee ouput unicast 1 3 7 8 set 15

Ruijie(config-if)#exit
```

The following example configures guaranteed buffer for multicast queue.

```
Ruijie#config

Ruijie(config)# interface tenGigabitEthernet 1/9

Ruijie(config-if)#mmu queue-guarantee ouput multicast 1 3 7 8 set 15

Ruijie(config-if)#exit
```

Platform Description N/A

3.16 mmu queue-thredshold

Use this command to configure the shared buffer.
mmu queue-thredshold output { unicast | multicast } { *queue-id1* [*queue-id2* [*queue-idN*]] } **set** *th%*

Use the **no** form of this command to restore the default setting.
no mmu queue-thredshold output { unicast | multicast }

Parameter Description

Parameter	Description
output	Performs buffer management on the output queue.
unicast	Performs buffer management on the output unicast queue.
multicast	Performs buffer management on the output multicast queue.
queue-idN	Queue ID
th%	Total shared buffer * threshold = Available buffer

Defaults 100% for unicast queue and 15% for multicast queue.

Command Mode Interface configuration mode

Default Level 14

Usage Guide There are different effective ways on products.

Configuration Examples The following example configures shared buffer for unicast queue.

```
Ruijie#config
Ruijie(config)# interface tenGigabitEthernet 1/9
Ruijie(config-if)#mmu queue-thredshold ouput unicast 1 3 7 8 set 80
```

```
Ruijie(config-if)#exit
Ruijie(config)#exit
Ruijie#
```

The following example configures shared buffer for multicast queue.

```
Ruijie#config
Ruijie(config)# interface tenGigabitEthernet 1/9
Ruijie(config-if)#mmu queue-thredshold ouput multicast 1 3 7 8 set 80
Ruijie(config-if)#exit
Ruijie(config)#exit
Ruijie#
```

Platform Description N/A

3.17 mmu queue-loss-warn { unicast | multicast }

Use this command to enable the queue packet loss alarm function. Use the **no** form of this command to disable this function.

[no] mmu queue-loss-warn { unicast | multicast } [*qid1 [qid2 [qidN]* **]] { on | off }**

Parameter Description

Parameter	Description
unicast	Indicates a unicast queue.
multicast	Indicates a multicast queue.
qid	Indicates a queue ID.
on	Enables the queue packet loss alarm function.
off	Disables the queue packet loss alarm function.

Command Mode Global configuration mode / interface configuration mode

Default Level 14

Usage Guide The commands in global configuration mode takes effect on all interfaces, the commands in interface configuration mode takes effect on the current interface, and the latter has a higher priority than the former.

Configuration Examples The following example enables the packet loss alarm function in global configuration mode.

```
Ruijie#config
```

```
Ruijie(config)# mmu queue-loss-warn unicast 1 2 3 on
Ruijie(config)# mmu queue-loss-warn multicast 5 6 7 on
Ruijie(config)#exit
Ruijie#
```

The following example configures the packet loss alarm function in interface configuration mode.

```
Ruijie#config
Ruijie(config)# interface hundredGigabitEthernet 0/50
Ruijie(config-if-HundredGigabitEthernet 0/50)#mmu queue-loss-warn unicast 1 2 3 on
Ruijie(config-if-HundredGigabitEthernet 0/50)#mmu queue-loss-warn unicast 4 5 6 off
Ruijie(config-if-HundredGigabitEthernet 0/50# mmu queue-loss-warn multicast 2 3 4 on
Ruijie(config-if-HundredGigabitEthernet 0/50# mmu queue-loss-warn multicast 6 7 8 off
Ruijie(config-if-HundredGigabitEthernet 0/50#exit
Ruijie(config)#
```

Verification Run the **show run** command to display the configuration.

3.18 mmu queue-loss-warn frequency

Use this command to configure the queue packet loss alarm frequency. Use the **no** form of this command to disable this function.

[no] mmu queue-loss-warn frequency cycle *value1* **times** *value2*

Parameter Description

Parameter	Description
value1	Indicates the alarm printing period, in seconds.
value2	Indicates the number of alarms that can be printed in one period.

Command Mode Global configuration mode

Default Level 14

Usage Guide Up to 30 packet loss alarms can be printed within 60s by default.

Configuration Examples The following example configures the frequency of packet loss alarms.

```
Ruijie#config
Ruijie(config)# mmu queue-loss-warn frequency cycle 35 times 8
```

```
Ruijie(config)#exit
Ruijie#
```

Verification Run the **show run** command to display the configuration.

3.19 mmu sample-period

Use this command to configure the sampling interval for counting the occupied buffer and sent and discarded records in a queue. Use the **no** form of this command to restore the default setting.

mmu sample-period { buffer-counter | queue-counter } *value*

no mmu sample-period { buffer-counter | queue-counter }

Parameter Description

Parameter	Description
buffer-counter	Count of the occupied buffer
queue-counter	Count of sent and discarded records in a queue
value	Sampling time, in the unit of seconds, range:1-10.

Defaults 5 seconds

Command Mode Global configuration mode

Default Level 14

Usage Guide

1. The effective way of this command varies with the equipment and depends on the product.
2. The user-configured value is displayed when the **show run** command is executed, even if the user-configured value is the default value.

Configuration Examples The following example configures the sampling interval for counting the occupied buffer and sent and discarded records in a queue.

```
Ruijie#config
Ruijie(config)# mmu sample-period buffer-counter 10
Ruijie(config)# mmu sample-period queue-counter 8
Ruijie(config)#exit
```

Verification Run the **show run** command to display the sampling interval configuration.

3.20 mmu slice-id compatible

Use this command to switch the numbering mode of slice ID. Use the **no** form of this command to restore the default settings.

mmu slice-id compatible

no mmu slice-id compatible

Parameter Description

Parameter	Description
N/A	

Defaults By default, the number of slice ID starts from 1; run the command to start ID from 0.

Command Mode Global configuration mode

Default Level 14

Usage Guide /A

Configuration Examples The following example switches the numbering mode of slice ID.

```
Ruijie#config
Ruijie(config)# mmu slice-id compatible
Ruijie(config)#exit
```

Verification Run the **show run** command to display the current numbering mode.
Run the **show queue-buffer** command to display the range of current numbering mode.

3.21 mmu xoff-threshold

Use this command to configure the flow control threshold. Use the **no** form of this command to restore the default setting.
mmu xoff-threshold pg [*pg-id0* [*pg-id1* [*pg-id N*]] **set** *thr%*
no mmu xoff-threshold pg

Parameter Description

Parameter	Description
pg-idN	Priority group ID
th%	Total shared buffer x Threshold percentage = Maximum available buffer for the queue

Defaults The default value depends on the product.

Command Mode Interface configuration mode

Default Level 14

Usage Guide
1. The effective way of this command varies with the equipment and depends on the product.
2. The configuration takes effect only when flow control/PFC is enabled.

3. If flow control/PFC is not enabled, the shared buffer threshold of the PG is according to the value of **ingress-threshold**.
4. The user-configured value is displayed when the **show run** command is executed, even if the user-configured value is the default value.

Configuration Examples The following example configures the percentage of the multi-priority group flow control threshold.

```
Ruijie#config
Ruijie(config)# interface tenGigabitEthernet 0/9
Ruijie(config-if)#mmu xoff-threshold pg 1 3 7 8 set 80
Ruijie(config-if)#exit
```

Verification Run the **show run** command to display the flow control threshold configuration.

3.22 mmu xon-threshold-offset

Use this command to configure the flow control restoration threshold. Use the **no** form of this command to restore the default setting.
mmu xon-threshold-offset pg [*pg-id0* [*pg-id1* [*pg-id N*]] **set** *value*
no mmu xon-threshold-offset pg

Parameter Description

Parameter	Description
pg-idN	Priority group ID
value	Offset value of the xon and xoff thresholds, in the unit of cell, range: 1-500

Defaults 8 cells by default

Command Mode Interface configuration mode

Default Level 14

Usage Guide
1. The effective way of this command varies with the equipment and depends on the product.
2. The configuration takes effect only when flow control/PFC is enabled.
3. The user-configured value is displayed when the **show run** command is executed, even if the user-configured value is the default value.

Configuration Examples The following example configures the multi-priority group flow control restoration threshold.

```
Ruijie#config
Ruijie(config)# interface tenGigabitEthernet 0/9
Ruijie(config-if)#mmu xon-threshold-offset pg 1 3 7 8 set 10
```

```
Ruijie(config-if)#exit
```

Verification Run the **show run** command to display the flow control restoration threshold configuration.

3.23 mmu usage-warn-limit

Use these commands to configure the warning threshold of buffer usage. Use the **no** form of these commands to restore the default settings.

1. For global buffer

mmu usage-warn-limit set *value*

2. For shared service pool

mmu usage-warn-limit {ingress-service-pool | egress-service-pool} *sp-id* **set** *value*

3. For ingress pg/headroom or egress unicast/multicast queue buffer

mmu usage-warn-limit {**pg-headroom | priority-group** | **unicast | multicast**} {*id1* [id*2* [id*N*]]**} set** *value*

Parameter Description

Parameter	Description
ingress-service-pool	Ingress shared service pool
egress-service-pool	Egress shared service pool
sp-id	ID of shared service pool, range 0-3
pg-headroom	Priority group headroom
priority-group	Priority group
unicast	Performs buffer management on the output unicast queue.
multicast	Performs buffer management on the output multicast queue.
idN	Priority group ID or queue ID, range: 1-8
value	Usage warning threshold in the unit of percentage, range: 1-100.

Defaults The default threshold is 0.

Command Mode Global configuration mode/Interface configuration mode

Default Level 14

Usage Guide If the buffer usage for the port group/queue exceeds the global threshold, a warning log is printed. If the buffer usage for the queue exceeds the queue threshold, a warning log is printed. To avoid producing excessive logs, the warning log for a port group/queue is printed only once within 30 seconds.

Configuration The following example sets the usage warning threshold globally.

Examples

```
Ruijie#config
Ruijie(config)# mmu usage-warn-limit set 90
```

The following example sets the usage warning threshold for unicast queue 3 and 8 to 80%.

```
Ruijie#config
Ruijie(config)# int te1/1
Ruijie(config-if)# mmu usage-warn-limit unicast 3 8 set  80
```

The following example sets the usage warning threshold for multicast queue 1 and 4 to 80%.

```
Ruijie#config
Ruijie(config)# int te1/1
Ruijie(config-if)# mmu usage-warn-limit multicast 1 4 set  80
```

The following example sets the buffer usage warning threshold for priority groups 3 and 6 to 80%.

```
Ruijie#config
Ruijie(config)# int te1/1
Ruijie(config-if)# mmu usage-warn-limit priority-group 3 6 set  80
```

The following example sets the headroom usage warning threshold for priority groups 5 and 8 to 80%.

```
Ruijie#config
Ruijie(config)# int te1/1
Ruijie(config-if)# mmu usage-warn-limit pg-headroom 5 8 set  80
```

The following example sets the usage warning threshold for ingress shared service pool SP1 to 10%, and egress shared service pool SP2 to 20%.

```
Ruijie#config
Ruijie(config)# mmu usage-warn-limit ingress-service-pool 1 set 10
Ruijie(config)# mmu usage-warn-limit egress-service-pool 2 set 20
Ruijie(config)#exit
Ruijie#
```

Platform Description

N/A

3.24 mmu tcb-enable

Use this command to enable MMU-TCB function. Use the **no** form of this command to disable this function.

mmu tcb-enable

no mmu tcb-enable

Parameter Description

Parameter	Description

Command Mode Global configuration mode

Default Level 14

Usage Guide MMU-TCB function is disabled by default.
Only devices using TD3/TH2 chip support this function. The effective way of this command varies with the product.

Configuration Examples 1: In the global configuration mode, enable MMU-TCB function.

```
Ruijie#config
Ruijie(config)# mmu tcb-enable
Ruijie(config)#exit
Ruijie#
```

Verification 1: Run the **show run** command to check the current configuration.

3.25 show pg-buffer interface

Use this command to display the priority group buffer usage of an interface.
show pg-buffer interface *interface-id*

Parameter Description

Parameter	Description
interface-id	Interface ID

Command Mode Privileged EXEC mode, global configuration mode, or interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays the buffer usage of a specific interface (implemented based on the ingress PG).

```
 Ruijie#show pg-buffer interface hu0/1
Interface HundredGigabitEthernet 0/1:
Slice 1:
PriGroupId  Used cells  Available cells  Usage  Usage warn limit  Usage warn count  Peaked cells  Service pool
0           991         59025            1%     0%                0                 1004          0(SP-0)
1           0           60000            0%     0%                0                 0             1(SP-1)
```

2	0	60000	0%	0%	0	0	0(SP-0)
3	0	60000	0%	0%	0	0	0(SP-0)
4	0	60000	0%	0%	0	0	0(SP-0)
5	0	60000	0%	0%	0	0	0(SP-0)
6	0	60000	0%	0%	0	0	3(SP-3)
7	0	60000	0%	0%	0	0	0(SP-0)

PriGroupId	Used headroom	Available headroom	Usage	Usage warn limit	Usage warn count	Peaked headroom
0	0	0	0%	0%	0	0
1	0	0	0%	0%	0	0
2	0	0	0%	0%	0	0
3	0	0	0%	0%	0	0
4	0	0	0%	0%	0	0
5	0	0	0%	0%	0	0
6	0	0	0%	0%	0	0
7	0	0	0%	0%	0	0

Service pool	Global shared cells	Used cells	Peaked cells
0(SP-0)	16248	1952	1973
1(SP-1)	10000	0	0
2(SP-2)	0	0	0
3(SP-3)	10000	0	0

Slice 2:

PriGroupId	Used cells	Available cells	Usage	Usage warn limit	Usage warn count	Peaked cells	Service pool
0	685	59331	1%	0%	0	692	0(SP-0)
1	0	60000	0%	0%	0	0	1(SP-1)
2	0	60000	0%	0%	0	0	0(SP-0)
3	0	60000	0%	0%	0	0	0(SP-0)
4	0	60000	0%	0%	0	0	0(SP-0)
5	0	60000	0%	0%	0	0	0(SP-0)
6	0	60000	0%	0%	0	0	3(SP-3)
7	0	60000	0%	0%	0	0	0(SP-0)

PriGroupId	Used headroom	Available headroom	Usage	Usage warn limit	Usage warn count	Peaked headroom
0	0	0	0%	0%	0	0
1	0	0	0%	0%	0	0
2	0	0	0%	0%	0	0
3	0	0	0%	0%	0	0
4	0	0	0%	0%	0	0
5	0	0	0%	0%	0	0
6	0	0	0%	0%	0	0
7	0	0	0%	0%	0	0

```
Service pool  Global shared cells  Used cells  Peaked cells
0(SP-0)       16248                1331        1340
1(SP-1)       10000                257         258
2(SP-2)       0                    0           0
3(SP-3)       10000                0           0


Slot  Slice  PortGroup  Total cells  Total usage  Static used cells  Global shared cells  Available shared cells
0     1      1          53248        3%           32                 36248                34296
0     2      1          53248        3%           48                 36248                34660
0     3      1          53248        0%           0                  36248                36248
0     4      1          53248        0%           0                  36248                36248
```

Field	Description
Slice	No. of the module on the chip for buffer division
Type	Queue type, including unicast queue and multicast queue
Queue	Queue No., ranging from 1 to 8 by default and can be switched to 0 to 7 through configuration
Used cells	Size of the occupied buffer in a queue, in the unit of cell
Available cells	Size of the available buffer in a queue, in the unit of cell
Usage	Percentage of the occupied buffer in a queue
Usage warn limit	Buffer usage warning threshold of a specific port group or queue
Usage warn count	Number of times that the occupied buffer exceeds the warning threshold
Peaked cells	Historical peak value of the used buffer
Slot	Slot No. of the line card
PortGroup	Port group No., starting from 1
Total cells	Total buffer on a specified slice
Total usage	Percentage of the occupied buffer on a specified slice
Static used cells	Size of the occupied guarantee buffer on a specified slice
Global shared cells	Total shared buffer on a specified slice
Available shared cells	Size of the available shared buffer on a specified slice

The following example displays the buffer usage of all interfaces (implemented based on the ingress PG).

```
Ruijie#show pg-buffer

Interface HundredGigabitEthernet 0/1:

Slice 1:

PriGroupId  Used cells  Available cells  Usage  Usage warn limit  Usage warn count  Peaked cells  Service pool
0           991         59025            1%     0%                0                 1004          0(SP-0)
1           0           60000            0%     0%                0                 0             1(SP-1)
2           0           60000            0%     0%                0                 0             0(SP-0)
3           0           60000            0%     0%                0                 0             0(SP-0)
4           0           60000            0%     0%                0                 0             0(SP-0)
5           0           60000            0%     0%                0                 0             0(SP-0)
6           0           60000            0%     0%                0                 0             3(SP-3)
7           0           60000            0%     0%                0                 0             0(SP-0)
```

PriGroupId	Used headroom	Available headroom	Usage	Usage warn limit	Usage warn count	Peaked headroom
0	0	0	0%	0%	0	0
1	0	0	0%	0%	0	0
2	0	0	0%	0%	0	0
3	0	0	0%	0%	0	0
4	0	0	0%	0%	0	0
5	0	0	0%	0%	0	0
6	0	0	0%	0%	0	0
7	0	0	0%	0%	0	0

Service pool	Global shared cells	Used cells	Peaked cells
0(SP-0)	16248	1952	1973
1(SP-1)	10000	0	0
2(SP-2)	0	0	0
3(SP-3)	10000	0	0

Slice 2:

PriGroupId	Used cells	Available cells	Usage	Usage warn limit	Usage warn count	Peaked cells	Service pool
0	685	59331	1%	0%	0	692	0(SP-0)
1	0	60000	0%	0%	0	0	1(SP-1)
2	0	60000	0%	0%	0	0	0(SP-0)
3	0	60000	0%	0%	0	0	0(SP-0)
4	0	60000	0%	0%	0	0	0(SP-0)
5	0	60000	0%	0%	0	0	0(SP-0)
6	0	60000	0%	0%	0	0	3(SP-3)
7	0	60000	0%	0%	0	0	0(SP-0)

PriGroupId	Used headroom	Available headroom	Usage	Usage warn limit	Usage warn count	Peaked headroom
0	0	0	0%	0%	0	0
1	0	0	0%	0%	0	0
2	0	0	0%	0%	0	0
3	0	0	0%	0%	0	0
4	0	0	0%	0%	0	0
5	0	0	0%	0%	0	0
6	0	0	0%	0%	0	0
7	0	0	0%	0%	0	0

Service pool	Global shared cells	Used cells	Peaked cells
0(SP-0)	16248	1331	1340
1(SP-1)	10000	257	258
2(SP-2)	0	0	0
3(SP-3)	10000	0	0

Slot	Slice	PortGroup	Total cells	Total usage	Static used cells	Global shared cells	Available shared cells
0	1	1	53248	3%	32	36248	34296
0	2	1	53248	3%	48	36248	34660
0	3	1	53248	0%	0	36248	36248
0	4	1	53248	0%	0	36248	36248

.....

Interface HundredGigabitEthernet 0/64:

Slice 1:

PriGroupId	Used cells	Available cells	Usage	Usage warn limit	Usage warn count	Peaked cells	Service pool
0	0	60000	0%	0%	0	0	0(SP-0)
1	0	60000	0%	0%	0	0	1(SP-1)
2	0	60000	0%	0%	0	0	0(SP-0)
3	0	60000	0%	0%	0	0	0(SP-0)
4	0	60000	0%	0%	0	0	0(SP-0)
5	0	60000	0%	0%	0	0	0(SP-0)
6	0	60000	0%	0%	0	0	3(SP-3)
7	0	60000	0%	0%	0	0	0(SP-0)

PriGroupId	Used headroom	Available headroom	Usage	Usage warn limit	Usage warn count	Peaked headroom
0	0	0	0%	0%	0	0
1	0	0	0%	0%	0	0
2	0	0	0%	0%	0	0
3	0	0	0%	0%	0	0
4	0	0	0%	0%	0	0
5	0	0	0%	0%	0	0
6	0	0	0%	0%	0	0
7	0	0	0%	0%	0	0

Service pool	Global shared cells	Used cells	Peaked cells
0(SP-0)	16248	1955	1973
1(SP-1)	10000	0	0
2(SP-2)	0	0	0
3(SP-3)	10000	0	0

Slice 2:

PriGroupId	Used cells	Available cells	Usage	Usage warn limit	Usage warn count	Peaked cells	Service pool
0	0	60000	0%	0%	0	0	0(SP-0)
1	0	60000	0%	0%	0	0	1(SP-1)
2	0	60000	0%	0%	0	0	0(SP-0)
3	0	60000	0%	0%	0	0	0(SP-0)
4	0	60000	0%	0%	0	0	0(SP-0)
5	0	60000	0%	0%	0	0	0(SP-0)
6	0	60000	0%	0%	0	0	3(SP-3)

```
7          0          60000          0%     0%              0              0          0(SP-0)

PriGroupId  Used headroom  Available headroom  Usage  Usage warn limit  Usage warn count  Peaked headroom
0           0              0                   0%     0%                0                 0
1           0              0                   0%     0%                0                 0
2           0              0                   0%     0%                0                 0
3           0              0                   0%     0%                0                 0
4           0              0                   0%     0%                0                 0
5           0              0                   0%     0%                0                 0
6           0              0                   0%     0%                0                 0
7           0              0                   0%     0%                0                 0

Service pool  Global shared cells  Used cells  Peaked cells
0(SP-0)       16248                1337        1340
1(SP-1)       10000                257         258
2(SP-2)       0                    0           0
3(SP-3)       10000                0           0

Slot   Slice  PortGroup  Total cells  Total usage  Static used cells  Global shared cells  Available shared cells
0      1      1          53248        3%           32                 36248                34293
0      2      1          53248        3%           48                 36248                34654
0      3      1          53248        0%           0                  36248                36248
0      4      1          53248        0%           0                  36248                36248
```

Field	Description
Same as the preceding table.	

3.26 show queue-buffer interface

Use this command to display buffer usage of interfaces.

show queue-buffer interface *interface-id*

Parameter Description

Parameter	Description
interface-id	Interface

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Default Level 14

Usage Guide N/A

Configuration The following example displays buffer usage of the specified interface based on output queue.

Examples

```
Ruijie(config)#show queue-buffer interface hundredGigabitEthernet 0/1
Interface HundredGigabitEthernet 0/1:
Type       Queue  Used cells  Available cells  Usage  Usage warn limit  Usage warn count  Peaked cells  Service
pool
Unicast    1      0           8896             0%     0%                0                 0
1(SP-1)
Unicast    2      0           8896             0%     0%                0                 0
1(SP-1)
Unicast    3      0           8228             0%     0%                0                 0
0(SP-0)
Unicast    4      0           8228             0%     0%                0                 0
0(SP-0)
Unicast    5      0           8228             0%     0%                0                 0
0(SP-0)
Unicast    6      0           8228             0%     0%                0                 0
0(SP-0)
Unicast    7      0           8228             0%     0%                0                 0
0(SP-0)
Unicast    8      0           8228             0%     0%                0                 0
0(SP-0)
Multicast  1      991         18               98%    0%                0                 1001
1(SP-1)
Multicast  2      0           1008             0%     0%                0                 1
3(SP-3)
Multicast  3      0           1008             0%     0%                0                 0
3(SP-3)
Multicast  4      0           1008             0%     0%                0                 0
3(SP-3)
Multicast  5      0           1035             0%     0%                0                 0
0(SP-0)
Multicast  6      0           1035             0%     0%                0                 0
0(SP-0)
Multicast  7      0           896              0%     0%                0                 0
2(SP-2)
Multicast  8      0           1035             0%     0%                0                 0
0(SP-0)
Service pool  Global shared cells  Used cells  Peaked cells
0(SP-0)       9248                 0           6
1(SP-1)       10000                1991        1999
2(SP-2)       8000                 0           0
3(SP-3)       9000                 0           1


Slice 3:
Type       Queue  Used cells  Available cells  Usage  Usage warn limit  Usage warn count  Peaked cells  Service
```

```
pool
Unicast    1      0           8896            0%     0%               0                0
1(SP-1)
Unicast    2      0           8896            0%     0%               0                0
1(SP-1)
Unicast    3      0           8228            0%     0%               0                0
0(SP-0)
Unicast    4      0           8228            0%     0%               0                0
0(SP-0)
Unicast    5      0           8228            0%     0%               0                0
0(SP-0)
Unicast    6      0           8228            0%     0%               0                0
0(SP-0)
Unicast    7      0           8228            0%     0%               0                0
0(SP-0)
Unicast    8      0           8228            0%     0%               0                0
0(SP-0)
Multicast  1      0           1119            0%     0%               0                0
1(SP-1)
Multicast  2      0           1008            0%     0%               0                0
3(SP-3)
Multicast  3      0           1008            0%     0%               0                0
3(SP-3)
Multicast  4      0           1008            0%     0%               0                0
3(SP-3)
Multicast  5      0           1035            0%     0%               0                0
0(SP-0)
Multicast  6      0           1035            0%     0%               0                0
0(SP-0)
Multicast  7      0           896             0%     0%               0                0
2(SP-2)
Multicast  8      0           1035            0%     0%               0                0
0(SP-0)
Service pool  Global shared cells  Used cells  Peaked cells
0(SP-0)       9248                 0           0
1(SP-1)       10000                0           0
2(SP-2)       8000                 0           0
3(SP-3)       9000                 0           0

Slot   Slice  PortGroup  Total cells  Total usage  Usage warn limit  Static used cells  Global shared cells
Available shared cells
0      1      1          53248        3%           0%                0                  36248
34257
0      2      1          53248        3%           0%                0                  36248
```

```
34643
0      3      1          53248        0%          0%              0                 36248
36248
0      4      1          53248        0%          0%              0                 36248
36248
```

Field	Description
Slice	No. of the module on the chip for buffer division
Type	Queue type, including unicast queue and multicast queue
Queue	Queue No., ranging from 1 to 8 by default and can be switched to 0 to 7 through configuration
Used cells	Size of the occupied buffer in a queue, in the unit of cell
Available cells	Size of the available buffer in a queue, in the unit of cell
Usage	Percentage of the occupied buffer in a queue
Usage warn limit	Buffer usage warning threshold of a specific port group or queue
Usage warn count	Number of times that the occupied buffer exceeds the warning threshold
Peaked cells	Historical peak value of the used buffer
Slot	Slot No. of the line card
PortGroup	Port group No., starting from 1
Total cells	Total buffer on a specified slice
Total usage	Percentage of the occupied buffer on a specified slice
Static used cells	Size of the occupied guarantee buffer on a specified slice
Global shared cells	Total shared buffer on a specified slice
Available shared cells	Size of the available shared buffer on a specified slice
Service pool	Shared buffer pool, including ID and name

The following example displays the buffer queue information of all interfaces.

```
Ruijie#show queue-buffer
Interface HundredGigabitEthernet 0/1:
Slice 1:
Type       Queue  Used cells  Available cells  Usage  Usage warn limit  Usage warn count  Peaked cells  Service
pool
Unicast    1      0           8896             0%     0%                0                 0
1(SP-1)
Unicast    2      0           8896             0%     0%                0                 0
1(SP-1)
Unicast    3      0           8228             0%     0%                0                 0
0(SP-0)
Unicast    4      0           8228             0%     0%                0                 0
0(SP-0)
Unicast    5      0           8228             0%     0%                0                 0
0(SP-0)
Unicast    6      0           8228             0%     0%                0                 0
```

```
0(SP-0)
Unicast    7      0           8228             0%     0%                0                 0
0(SP-0)
Unicast    8      0           8228             0%     0%                0                 0
0(SP-0)
Multicast  1      990         20               98%    0%                0                 1001
1(SP-1)
Multicast  2      0           1008             0%     0%                0                 1
3(SP-3)
Multicast  3      0           1008             0%     0%                0                 0
3(SP-3)
Multicast  4      0           1008             0%     0%                0                 0
3(SP-3)
Multicast  5      0           1035             0%     0%                0                 0
0(SP-0)
Multicast  6      0           1035             0%     0%                0                 0
0(SP-0)
Multicast  7      0           896              0%     0%                0                 0
2(SP-2)
Multicast  8      0           1035             0%     0%                0                 0
0(SP-0)
Service pool  Global shared cells  Used cells  Peaked cells
0(SP-0)       9248                 0           6
1(SP-1)       10000                1983        1999
2(SP-2)       8000                 0           0
3(SP-3)       9000                 0           1

Slice 3:
Type       Queue  Used cells  Available cells  Usage  Usage warn limit  Usage warn count  Peaked cells  Service
pool
Unicast    1      0           8896             0%     0%                0                 0
1(SP-1)
Unicast    2      0           8896             0%     0%                0                 0
1(SP-1)
Unicast    3      0           8228             0%     0%                0                 0
0(SP-0)
Unicast    4      0           8228             0%     0%                0                 0
0(SP-0)
Unicast    5      0           8228             0%     0%                0                 0
0(SP-0)
Unicast    6      0           8228             0%     0%                0                 0
0(SP-0)
Unicast    7      0           8228             0%     0%                0                 0
0(SP-0)
```

```
Unicast    8      0           8228            0%     0%              0               0
0(SP-0)
Multicast  1      0           1119            0%     0%              0               0
1(SP-1)
Multicast  2      0           1008            0%     0%              0               0
3(SP-3)
Multicast  3      0           1008            0%     0%              0               0
3(SP-3)
Multicast  4      0           1008            0%     0%              0               0
3(SP-3)
Multicast  5      0           1035            0%     0%              0               0
0(SP-0)
Multicast  6      0           1035            0%     0%              0               0
0(SP-0)
Multicast  7      0           896             0%     0%              0               0
2(SP-2)
Multicast  8      0           1035            0%     0%              0               0
0(SP-0)
Service pool  Global shared cells  Used cells  Peaked cells
0(SP-0)       9248                 0           0
1(SP-1)       10000                0           0
2(SP-2)       8000                 0           0
3(SP-3)       9000                 0           0

Slot   Slice  PortGroup  Total cells  Total usage  Usage warn limit  Static used cells  Global shared cells
Available shared cells
0      1      1          53248        3%           0%                0                  36248
34265
0      2      1          53248        3%           0%                0                  36248
34649
0      3      1          53248        0%           0%                0                  36248
36248
0      4      1          53248        0%           0%                0                  36248
36248
......
Interface HundredGigabitEthernet 0/64:
Slice 2:
Type       Queue  Used cells  Available cells  Usage  Usage warn limit  Usage warn count  Peaked cells  Service
pool
Unicast    1      0           8896             0%     0%                0                 0
1(SP-1)
Unicast    2      0           8896             0%     0%                0                 0
1(SP-1)
Unicast    3      0           8228             0%     0%                0                 0
```

```
0(SP-0)
Unicast    4      0           8228            0%     0%              0                0
0(SP-0)
Unicast    5      0           8228            0%     0%              0                0
0(SP-0)
Unicast    6      0           8228            0%     0%              0                0
0(SP-0)
Unicast    7      0           8228            0%     0%              0                0
0(SP-0)
Unicast    8      0           8228            0%     0%              0                0
0(SP-0)
Multicast  1      0           1091            0%     0%              0                0
1(SP-1)
Multicast  2      0           1008            0%     0%              0                0
3(SP-3)
Multicast  3      0           1008            0%     0%              0                0
3(SP-3)
Multicast  4      0           1008            0%     0%              0                0
3(SP-3)
Multicast  5      0           1035            0%     0%              0                0
0(SP-0)
Multicast  6      0           1035            0%     0%              0                0
0(SP-0)
Multicast  7      0           896             0%     0%              0                0
2(SP-2)
Multicast  8      0           1035            0%     0%              0                0
0(SP-0)
Service pool  Global shared cells  Used cells  Peaked cells
0(SP-0)       9248                 11          14
1(SP-1)       10000                1330        1353
2(SP-2)       8000                 0           0
3(SP-3)       9000                 258         273

Slice 4:
Type       Queue  Used cells  Available cells  Usage  Usage warn limit  Usage warn count  Peaked cells  Service
pool
Unicast    1      0           8896            0%     0%              0                0
1(SP-1)
Unicast    2      0           8896            0%     0%              0                0
1(SP-1)
Unicast    3      0           8228            0%     0%              0                0
0(SP-0)
Unicast    4      0           8228            0%     0%              0                0
0(SP-0)
```

```
Unicast    5      0           8228            0%     0%               0                0
0(SP-0)
Unicast    6      0           8228            0%     0%               0                0
0(SP-0)
Unicast    7      0           8228            0%     0%               0                0
0(SP-0)
Unicast    8      0           8228            0%     0%               0                0
0(SP-0)
Multicast  1      0           1119            0%     0%               0                0
1(SP-1)
Multicast  2      0           1008            0%     0%               0                0
3(SP-3)
Multicast  3      0           1008            0%     0%               0                0
3(SP-3)
Multicast  4      0           1008            0%     0%               0                0
3(SP-3)
Multicast  5      0           1035            0%     0%               0                0
0(SP-0)
Multicast  6      0           1035            0%     0%               0                0
0(SP-0)
Multicast  7      0           896             0%     0%               0                0
2(SP-2)
Multicast  8      0           1035            0%     0%               0                0
0(SP-0)
Service pool  Global shared cells  Used cells  Peaked cells
0(SP-0)       9248                 0           0
1(SP-1)       10000                0           0
2(SP-2)       8000                 0           0
3(SP-3)       9000                 0           0

Slot   Slice  PortGroup  Total cells  Total usage  Usage warn limit  Static used cells  Global shared cells
Available shared cells
0      1      1          53248        3%           0%                0                  36248
34265
0      2      1          53248        3%           0%                0                  36248
34649
0      3      1          53248        0%           0%                0                  36248
36248
0      4      1          53248        0%           0%                0                  36248
36248
```

3.27 show queue-counter interface

Use this command to display buffer queue statistics of interfaces.

show queue-counter interface *interface-id*

Parameter Description

Parameter	Description
interface-id	Interface

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays buffer queue statistics of the specified interface based on output queue.

```
Ruijie#show queue-counter interface gigabitEthernet 0/9
Interface HundredGigabitEthernet 4/1:
  Unicast
  Queue     Transmitted Bytes         Dropped Bytes    Frame Loss Rate(%)    Transmit Rate(bps)
      1                     0                     0                     0                     0
      2                     0                     0                     0                     0
      3                     0                     0                     0                     0
```

```
    4                0                0                0                0
    5                0                0                0                0
    6                0                0                0                0
    7                0                0                0                0
    8            62797                0                0              656
Multicast
Queue     Transmitted Bytes      Dropped Bytes    Frame Loss Rate(%)    Transmit Rate(bps)
    1                0                0                0                0
    2                0                0                0                0
    3                0                0                0                0
    4                0                0                0                0
    5                0                0                0                0
    6                0                0                0                0
    7                0                0                0                0
    8                0                0                0                0
Unicast
Queue   Transmitted Packets     Dropped Packets    Frame Loss Rate(%)    Transmit Rate(pps)
    1                0                0                0                0
    2                0                0                0                0
    3                0                0                0                0
    4                0                0                0                0
    5                0                0                0                0
    6                0                0                0                0
    7                0                0                0                0
    8              472                0                0                0
Multicast
Queue   Transmitted Packets     Dropped Packets    Frame Loss Rate(%)    Transmit Rate(pps)
    1                0                0                0                0
    2                0                0                0                0
    3                0                0                0                0
    4                0                0                0                0
    5                0                0                0                0
    6                0                0                0                0
    7                0                0                0                0
    8                0                0                0                0
```

Field	Description
Dev/Slot	Device/slot ID. If it is a case device, the display format is devid/-, and the case device only pays attention to the device number; if it is a box device, the display format is devid/slotid, and the device pays attention to device and slot number
PortGroup	Port group ID from 1
inner-port	Inner port ID from 1
Queue	Queue ID, from 1-8
Transmitted bytes	Transmitted bytes in the specified queue

Dropped bytes	Discarded bytes in the specified queue
Loss Rate(%)	The rate of discarding bytes (or discarded packets) to the total bytes (or the total packets). This rate counts the total discarding rate
Loss Rate Peak	The historical peak of the instantaneous discarding rate. This rate counts the bytes (or packets) discarding rate in 5 seconds
Peak Time	Record the time of historical peak of the instantaneous discarding rate
Transmit Rate(bps)	In the specified queue, the forwarding rate is bps (bit rate per second). This rate counts including the frame gap, so it has counting error
Transmitted packets	Number of transmitted packets in the specified queue
Dropped packets	Number of discarded packets in the specified queue
Transmit Rate(pps)	Transmitted rate pps (frame per second) in the specified queue

2: Display the queue statistics of all interfaces

```
Ruijie#show queue-counter
Interface HundredGigabitEthernet 0/1:
  Unicast
  Queue     Transmitted Bytes         Dropped Bytes    Frame Loss Rate(%)    Transmit
Rate(bps)
      1          117380835776         1056130216960                 89.99
50525032
      2                     0                     0                     0
0
      3                     0                     0                     0
0
      4            2736178496           24624019520                 89.99
50525056
      5                     0                     0                     0
0
      6                     0                     0                     0
0
      7                     0                     0                     0
0
      8               1200887                     0                     0
664
  Multicast
  Queue     Transmitted Bytes         Dropped Bytes    Frame Loss Rate(%)    Transmit
Rate(bps)
      1              24098176             233925440                 90.66
0
      2                     0                     0                     0
0
      3                     0                     0                     0
0
      4                     0                     0                     0
```

```
0
      5                    0                    0                    0
0
      6                    0                    0                    0
0
      7                    0                    0                    0
0
      8                    0                    0                    0
0
  Unicast
  Queue    Transmitted Packets       Dropped Packets    Frame Loss Rate(%)    Transmit
Rate(pps)
      1            1834075559          16502034640                89.99
75183
      2                    0                    0                    0
0
      3                    0                    0                    0
0
      4             42752789            384750305                89.99
75183
      5                    0                    0                    0
0
      6                    0                    0                    0
0
      7                    0                    0                    0
0
      8                 9306                    0                    0
0
  Multicast
  Queue    Transmitted Packets       Dropped Packets    Frame Loss Rate(%)    Transmit
Rate(pps)
      1                376534              3655085                90.66
0
      2                    0                    0                    0
0
      3                    0                    0                    0
0
      4                    0                    0                    0
0
      5                    0                    0                    0
0
      6                    0                    0                    0
0
      7                    0                    0                    0
0
```

```
      8                    0                    0                    0
0Gi0/24        0                    0                    0                    0.000
......
Interface HundredGigabitEthernet 0/64:
  Unicast
  Queue     Transmitted Bytes         Dropped Bytes    Frame Loss Rate(%)    Transmit
Rate(bps)
      1           83892643136          754894738496                89.99
0
      2                    0                    0                    0
0
      3                    0                    0                    0
0
      4                    0                    0                    0
0
      5                    0                    0                    0
0
      6                    0                    0                    0
0
      7                    0                    0                    0
0
      8              1203321                    0                    0
664
  Multicast
  Queue     Transmitted Bytes         Dropped Bytes    Frame Loss Rate(%)    Transmit
Rate(bps)
      1             126178880            1208592000                90.54
0
      2                    0                    0                    0
0
      3                    0                    0                    0
0
      4                    0                    0                    0
0
      5                    0                    0                    0
0
      6                    0                    0                    0
0
      7                    0                    0                    0
0
      8                    0                    0                    0
0
  Unicast
  Queue   Transmitted Packets       Dropped Packets    Frame Loss Rate(%)    Transmit
Rate(pps)
```

```
      1            1310822549           11795230289                 89.99
0
      2                     0                     0                     0
0
      3                     0                     0                     0
0
      4                     0                     0                     0
0
      5                     0                     0                     0
0
      6                     0                     0                     0
0
      7                     0                     0                     0
0
      8                  9317                     0                     0
0
  Multicast
  Queue   Transmitted Packets       Dropped Packets    Frame Loss Rate(%)    Transmit
Rate(pps)
      1               1971545              18884250                 90.54
0
      2                     0                     0                     0
0
      3                     0                     0                     0
0
      4                     0                     0                     0
0
      5                     0                     0                     0
0
      6                     0                     0                     0
0
      7                     0                     0                     0
0
      8                     0                     0                     0
0
```

Platform Description

N/A

Reliability Configuration Commands

1. REUP Commands
2. RLDP Commands
3. DLDP Commands
4. VRRP Commands
5. VRRP Plus Commands
6. BFD Commands
7. IP Event Dampening Commands
8. VSU Commands
9. RNS&Track Commands
10. PCAP Commands
11. HAM Commands
12. VAP Commands

1 REUP Commands

1.1 link state track

Use this command to enable the link state track group. Use the **no** form of this command to disable a link state track group.

link state track [*num* | **up-delay** *timer*]

no link state track [*num*]

Parameter Description

Parameter	Description
num	Interface ID of the link aggregation group.
up-delay *timer*	Downlink delay for link tracking, the default value is 0.

Defaults N/A.

Command Mode Global configuration mode.

Usage Guide First create a link state track group and then add a port into the specified link state track group.

Configuration Examples The following example creates a link state track group:

```
Ruijie(config)# link state track 1
```

The following example creates a link state track group, and enables 30 seconds of downlink delay up, that is, when the upstream link becomes up, the downstream link becomes up after 30 seconds.

```
Ruijie(config)# link state track 1 up-delay 30
```

Related Commands

Command	Description
link state group	Adds the port to the specified link state track group.

Platform Description N/A.

1.2 link state group

Use this command to add the port into the specified link state track group. Use the **no** form of this command to delete a port from the specified link state track group.

link state group *num* { **upstream** | **downstream** }

no link state group

Parameter Description

Parameter	Description
Num	ID of the link state track group.
Upstream	Configures the port to be an upstream port in the link state track group.
Downstream	Configures the port to be a downstream port in the link state track group.

Defaults The port is not added into any link state track group.

Command Mode Interface configuration mode.

Usage Guide First create a link state track group and then add a port into the specified link state track group.

Configuration Examples The following example adds the port fa0/2 into the link state track group:

```
Ruijie(config)# link state track 1
Ruijie(config)# interface fa 0/2
Ruijie(config-if)# link state group 1 upstream
```

Related Commands

Command	Description
link state track	Enables a link state track group.

Platform Description N/A.

1.3 mac-address-table move update max-update-rate

Use this command to configure the maximum number of MAC address update packets sent per second. Use the **no** form of this command to remove the settings.

mac-address-table move update max-update-rate *pkts-per-second*

no mac-address-table move update max-update-rate

Parameter Description

Parameter	Description
pkts-per-second	The maximum number of MAC address update packets sent per second. It ranges from 0 to 32000, and the default value is 150.

Defaults A maximum of 150 MAC address update packets are sent per second.

Command Mode Global configuration mode.

Usage Guide When a link is switched, REUP sends a certain number of MAC address update packets to an uplink device in every second to recover downlink data transmission of the uplink device.

Configuration Examples The following example configures the maximum number of MAC address update packets sent per second:

```
Ruijie(config)# mac-address-table move update max-update-rate 20
```

Related Commands

Command	Description
N/A.	N/A.

Platform Description N/A.

1.4 mac-address-table move update receive

Use this command to enable receiving the MAC address table updates. Use the **no** form of this command to disable receiving MAC address table updates.

mac-address-table move update receive

no mac-address-table move update receive

Parameter Description

Parameter	Description
N/A.	N/A.

Defaults Disabled.

Command Mode Global configuration mode.

Usage Guide The dual link backup switchover will lead to the loss of downstream data flow, for the MAC address for the uplink switch has not been updated in time. Therefore, it is necessary to update the MAC address table of the uplink switch, to reduce the loss of L2 data flow. You need to enable the switch of receiving the MAC address updates on the uplink switch.

Configuration Examples

```
Ruijie(config)# mac-address-table move update receive
```

Related Commands

Command	Description
mac-address-table move update transit	Enables REUP to transmit the mac-address-table update messages.

Platform Description N/A.

1.5 mac-address-table move update receive vlan

Use this command to configure VLANs for processing MAC address updates. Use the **no** form of this command to remove VLANs for processing MAC address updates.

mac-address-table move update receive vlan *vlan-range*

no mac-address-table move update receive vlan *vlan-range*

Parameter Description

Parameter	Description
vlan-range	Range of the VLANs processing MAC address update packets.

Defaults All VLANs process MAC address update packets.

Command Mode Global configuration mode.

Usage Guide This command can be used to disable some VLANs from processing MAC address update packets. VLANs disabled from processing MAC address update packets can still recover downlink data transmission of the uplink device using MAC address update packets, but the capability to provide convergence on link failure will be degraded.

Configuration Examples The following example configures VLANs processing MAC address update packets:

```
Ruijie(config)# no mac-address-table move update receive vlan 20
```

Related Commands

Command	Description
mac-address-table move update receive	Enables REUP to receive MAC address update packets.

Platform Description N/A.

1.6 mac-address-table move update transit

Use this command to enable REUP to transmit MAC address table updates. Use the **no** form of this command to disable transmitting MAC address table updates.

mac-address-table move update transit

no mac-address-table move update transit

Parameter

Parameter	Description

Description

N/A.	N/A.

Defaults Disabled.

Command Mode Global configuration mode.

Usage Guide In order to reduce the link switchover and the loss of the downstream data flow, it is necessary to enable the switch of receiving the MAC address update messages on the uplink switch.

Configuration Examples

```
Ruijie(config)# mac-address-table move update transit
```

Related Commands

Command	Description
mac-address-table move update transit vlan	Enables REUP to transmit the mac-address-table update messages.

Platform Description N/A.

1.7 mac-address-table move update transit vlan

Use this command to configure VLANs for transmitting MAC address updates. Use the **no** form of this command to removing VLANs for transmitting MAC address updates.

mac-address-table move update transit vlan *vid*

no mac-address-table move update transit vlan

Parameter Description

Parameter	Description
vid	ID of the VLAN transmitting MAC address update packets.

Defaults Transmit the MAC-address update messages in the default VLAN on the port.

Command Mode Interface configuration mode.

Usage Guide When a link is switched, the VLAN enabled to transmit MAC address update packets will send MAC address update packets to its uplink device.

Configuration Examples The following example configures VLANs transmitting MAC address update packets:

```
Ruijie(config)# mac-address-table move update transit
```

Related Commands

Command	Description
mac-address-table move update transit	Enables REUP to receive the mac-address-table update messages.

Platform Description N/A.

1.8 mac-address-table update group

Use this command to add an interface to a MAC address update group. Use the **no** form of this command to remove an interface from the MAC address update group.

mac-address-table update group [*group-num*]

no mac-address-table update group

Parameter Description

Parameter	Description
group-num	The MAC address update group ID. The default group number is 1.

Defaults By default, no MAC address update group is configured.

Command Mode Interface configuration mode

Usage Guide In order to reduce the flood due to the MAC address update and the influence on the normal data transmission of the switch, Ruijie products add a configuration of MAC address update group. Only if all the interfaces are added to a MAC address update group, the downstream data transmission be restored rapidly.

Configuration Examples

```
Ruijie(config-if)# mac-address-table update group 2
```

Related Commands

Command	Description
show mac-address-table update group detail	Displays the MAC address update group information.

Platform Description N/A.

1.9 switchport backup interface

Use this command to configure the REUP dual link backup interface. Use the **no** form of this

command to remove the REUP dual link backup interface.

switchport backup interface *interface-id*

no switchport backup interface *interface-id*

Parameter Description

Parameter	Description
interface-id	Interface ID of the backup link.

Defaults N/A.

Command Mode Interface configuration mode.

Usage Guide Enter the primary interface configuration mode, the interface-id in the parameter is for the backup interface. When the active link fails, the backup link transmission is restored rapidly

Configuration Examples The following example sets the dual link backup, with fa 0/1 and fa 0/2 as primary interface and backup interface:

```
Ruijie(config)# interface fa 0/1
Ruijie(config-if)# switchport backup interface fa 0/2
```

Related Commands

Command	Description
show interface switchport backup	Displays the dual link backup configuration on the switch.

Platform Description N/A.

1.10 switchport backup interface preemption

Use this command to configure the REUP link preemption function.

switchport backup interface *interface-id* **preemption mode** { **forced** | **bandwidth** | **off** }

switchport backup interface *interface-id* **preemption delay** *delay-time*

no switchport backup interface *interface-id* **preemption delay**

Parameter Description

Parameter	Description
interface-id	The interface id of the backup link.
delay-time	The preemption delay time.

Defaults The preemption function is disabled by default.

The default preemption delay time is 35s.

Command Mode Interface configuration mode.

Usage Guide The preemption mode includes **forced, bandwidth and off**. In the **bandwidth** preemption mode, the interface with high bandwidth has priority over other interfaces to transmit the data. In the **forced** preemption mode, the primary has priority over backup interfaces to transmit the data. No preemption event occurs in the **off** preemption mode. By default, the preemption mode is off.
The preemption delay refers to the delay time of the link switchover after the restoration of the link failure.

Configuration Examples The following example sets the dual link backup, with fa 0/1 and fa 0/2 as the primary interface and backup interface, sets the bandwidth preemption mode and 40s preemption delay:

```
Ruijie(config)# interface fa 0/1
Ruijie(config-if)# switchport backup interface fa 0/2
preemption mode bandwitdh
Ruijie(config-if)# switchport backup interface fa 0/2
preemption delay 40
```

Related Commands

Command	Description
show interface switchport backup	Displays the dual link backup configuration.

Platform Description N/A.

1.11 switchport backup interface prefer

Use this command to configure VLAN load balancing on a link. Use the **no** form of this command to remove the VLAN load balancing settings.
switchport backup interface *interface-id* **prefer instance** *instance-range*
no switchport backup interface *interface-id* **prefer**

Parameter Description

Parameter	Description
interface-id	Interface ID of the backup link.
instance-range	Instance range of loading on the backup interface.

Defaults No VLAN load on the backup interface.

Command Mode Interface configuration mode.

Usage Guide MSTP instance mapping can be used to modify the mapping between an instance and a VLAN.

Configuration Examples The following example configures VLAN load balancing on dual links.

```
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport backup interface gigabitEthernet 0/2 prefer
instance 1
```

Related Commands

Command	Description
show interface switchport backup	Displays the configuration of dual-link backup on the switch.
spanning-tree mst configuration	Configures MSTP instances.

Platform Description N/A.

1.12 show interfaces switchport backup

Use this command to display the dual link backup information on the interfaces.

show interfaces [*interface-id*] **switchport backup** [**detail**]

Parameter Description

Parameter	Description
interface-id	The interface id of the dual link backup.
detail	Displays the detailed information about the dual link backup.

Defaults Show the dual link backup information on all interfaces.

Command Mode Privileged EXEC mode.

Usage Guide N/A.

Configuration Examples

```
Ruijie # show interfaces switchport backup detail
Switch Backup Interface Pairs:
Active Interface     Backup Interface      State
------------------------------------------------------
Gi0/23               Gi0/24                Active Up/Backup Standby
Interface Pair : Gi0/23, Gi0/24
Preemption Mode : Off
Preemption Delay : 35 seconds
Bandwidth : Gi0/23(1000 Mbits), Gi0/24(1000 Mbits)
```

Related Commands

Command	Description
N/A.	N/A.

Platform Description N/A.

1.13 show link state group

Use this command to display the information of a link state track group.

show link state group *num*

Parameter Description

Parameter	Description
num	ID of a link state track group.

Defaults N/A.

Command Mode Privileged EXEC mode.

Usage Guide N/A.

Configuration Examples The following example displays the link state track group:

```
Ruijie # show link state group
Link State Group:1  Status: Enabled, UP
Upstream Interfaces :Gi0/1(Up)
Downstream Interfaces :Gi0/3(Dwn), Gi0/4(Dwn)
Link State Group:2  Status: Disabled, Down
Upstream Interfaces :
Downstream Interfaces :
(Up):Interface up (Dwn):Interface Down (Dis):Interface disabled
```

Related Commands

Command	Description
N/A.	N/A.

Platform Description N/A.

1.14 show mac-address-table move update

Use this command to display the statistics about the MAC address updates tranceived on the interface.

show mac-address-table move update

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A.

Configuration Examples

```
Ruijie#show mac-address-table move update
Mac address table move update status:
Transit:disable
Receive:disable
Max-update-rate:150
Receive vlan:1-4094

Pair: Ag1,Ag2
Members            Status    Transit Count    Transit VLAN   Last Transit Time
------------------------------------------------------------------------------
--------------------
Ag1               Down      0
Ag2               Down      0
Pair: Ag3,Gi0/6
Members            Status    Transit Count    Transit VLAN   Last Transit Time
------------------------------------------------------------------------------
--------------------
Ag3               Down      0
Gi0/6              Down      0
Pair: Gi0/1,Gi0/2
Members            Status    Transit Count    Transit VLAN   Last Transit Time
------------------------------------------------------------------------------
--------------------
Gi0/1              Up        0
Gi0/2              Standby   0
```

Related Commands

Command	Description
N/A.	N/A.

Platform Description N/A.

1.15 show mac-address-table update group detail

Use this command to display the mac-address-table update group information.

show mac-address-table update group detail

Parameter Description

Parameter	Description
detail	Displays the detailed information about the mac-address-table update group.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A.

Configuration Examples

```
Ruijie # configure terminal
Ruijie (config)# mac-address-table move update receive
Ruijie (config)# interface range gigabitEthernet 0/3-4
Ruijie (config-if-range)# mac-address-table update group
Ruijie (config-if-range)# end
Ruijie # show mac-address-table update group detail
Mac-address-table Update Group:1
Received mac-address-table update message count:7
Group member  Receive Count  Last Receive Switch-ID  Receive Time
------------------------------------------------------------
GigabitEthernet 0/3  0             0000.0000.0000
GigabitEthernet 0/4  0             0000.0000.0000
```

Related Commands

Command	Description
N/A.	N/A.

Platform Description N/A.

2 RLDP Command

2.1 rldp detect-interval

Use this command to configure the interval at which the RLDP sends the detection message on the port. Use the **no** form of this command to restore the default value.

rldp detect-interval *interval*

no rldp detect-interval

Parameter Description

Parameter	Description
interval	Detection interval in the range 1 to 15 seconds

Defaults 3 seconds.

Command Mode Global configuration mode.

Usage Guide In the environment where STP is enabled, it is recommended that the product of interval multiplying the maximum number of detections is less than the topology convergence time of STP.

Configuration Examples The following example shows how to set the detection interval as 5s:

```
Ruijie(config)# rldp detect-interval 5
```

Related Commands

Command	Description
rldp detect-max	Sets the maximum number of detections.

Platform Description N/A.

2.2 rldp detect-max

Use this command to set the maximum number of sending detection packets on the port. If the neighboring port does not respond when this detection number is exceeded, the link is considered faulty. Use the **no** form of this command to restore it to the default value.

rldp detect-max *num*

no rldp detect-max

Parameter Description

Parameter	Description
num	Maximum number of detections in the range 2 to 10

Defaults 2.

Command Mode Interface configuration mode.

Usage Guide This command is used together with the detection interval to specify the maximum number of detections.

Configuration Examples The following example shows how to set the maximum number of detections as 5:

```
Ruijie(config)# rldp detect-max 5
```

Related Commands

Command	Description
rldp detect-interval	Sets the detection interval.

Platform Description N/A.

2.3 rldp enable

Use this command to enable RLDP globally. Use the **no** form of this command to disable the function.

rldp enable

no rldp enable

Parameter Description

Parameter	Description
N/A.	N/A.

Defaults Disabled.

Command Mode Global configuration mode.

Usage Guide You can enable RLDP on the interface only when the global RLDP is enabled.

Configuration Examples The following example shows how to enable RLDP:

```
Ruijie(config)# rldp enable
```

Related Commands

Command	Description
rldp port	Enables the RLDP function on the port.

Platform N/A.

Description

2.4 rldp error-recover interval

Use this command to configure the interval for the RLDP to regularly recover a failed port. This recovery function is disabled by default. Use the **no** form of this command to disable the regular recovery function. Use the **default** form of this command to restore default settings.

rldp error-recover interval *interval*

no rldp error-recover interval

default rldp error-recover interval

Parameter Description

Parameter	Description
interval	Interval in the unit of seconds, ranging from **30** to **86400**.

Defaults N/A

Command Mode Global configuration mode

Default Level 14

Command Mode Global configuration mode

Usage Guide This command is used to automatically and regularly recover a failed RLDP port (in the error state). When the RLDP port recovers from the error, the RLDP on the port restarts link fault detection. If the fault is eliminated, the RLDP maintains the normal state. If the fault persists, the RLDP can still detect the fault.

Configuration Example The following example sets the interval for periodic recovery to 600s.

```
Ruijie(config)# rldp error-recover interval 600
```

Prompt N/A

Common Errors N/A

Platform Description N/A

2.5 rldp neighbor-negotiation

Use this command to enable RLDP neighbor negotiation. Use the **no** form or **default** form of this command to restore the default setting.

rldp neighbor-negotiation

no rldp neighbor-negotiation

default rldp neighbor-negotiation

Parameter Description

Parameter	Description
N/A.	N/A.

Defaults RLDP neighbor negotiation is disabled by default.

Command Mode Global configuration mode.

Usage Guide With neighbor negotiation enabled, RLDP unidirectional-/bidirectional-link detection starts only after the neighbor negotiation is successful. (Receiving the Prob message from the neighbor indicates the neighbor negotiation is successful.)

Configuration Examples The following example shows how to enable RLDP neighbor negotiation:

```
Ruijie#config
Ruijie(config)#rldp neighbor-negotiation
```

Related Commands

Command	Description
rldp port	Enables the RLDP function on the port.

Platform Description N/A.

2.6 rldp port

Use this command to enable RLDP on the port and specify detection type and troubleshooting method. Use the **no** form of this command to disable the function.

rldp port { **unidirection-detect** | **bidirection-detect** | **loop-detect** } { **warning** | **shutdown-svi** | **shutdown-port** | **block | monitor** }

no rldp port { **unidirection-detect** | **bidirection-detect** | **loop-detect }**

Parameter Description

Parameter	Description
unidirection-detect	Sets unidirectional link detection.

bidirection-detect	Sets bidirectional link detection.
loop-detect	Sets loop detection type.
warning	Warns the user.
shutdown-svi	Shutdowns the SVI the port belongs to.
shutdown-port	Shutdowns the port.
block	Block the learning and forwarding function of the port.
monitor	Monitors the port state.

Defaults N/A

Command Mode Interface configuration mode.

Usage Guide The RLDP detection on the port takes effect only when the global RLDP is enabled.
Ports on which RLDP is enabled to handle downlink loop failures are random. For example, RLDP downlink loop detection is configured on both downlink ports A and B, and the configured failure handling mode of port A is **warning** while that of port B is **shutdown-port**. When there is a downlink loop between port A and port B, port A may detect the downlink loop failure prior to port B. After port A completes failure handling according to the configuration, it no longer sends packets to detect the downlink loop status. Port B fails to detect the downlink loop failure because it does not receive a loop detection packet from port A, but the downlink loop actually persists. If a detected downlink loop needs to be actually removed in application scenarios, downlink ports in the same loop must be restricted to use a consistent loop failure handling mode and the loop failure handling mode cannot be **warning**.
The **monitor** policy can be configured for the unidirectional link detection in order to correlate with ERPS (Ethernet Ring Protection Switching).

Configuration Examples The following example shows how to configure RLDP detection type and troubleshooting method.

```
Ruijie(config)# interface GigabitEthernet 2/0/9
Ruijie(config-if-GigabitEthernet 2/0/9)# rldp port loop-detect block
```

Related Commands

Command	Description
rldp enable	Enables RLDP globally.

Platform Description N/A.

2.7 rldp reset

Use this command to make all the ports that have been handled using rldp shutdown or disable to perform RLDP detection again.
rldp reset

Parameter Description

Parameter	Description
N/A.	N/A.

Defaults N/A.

Command Mode Privileged EXEC mode.

Usage Guide N/A.

Configuration Examples The example below demonstrates how to restore the port from the failed state:

```
Ruijie# rldp reset
```

Related Commands

Command	Description
rldp enable	Enables RLDP globally.

Platform Description N/A.

2.8 show rldp

Use this command to display the RLDP information.

show rldp [**interface** *interface-id*]

Parameter Description

Parameter	Description
interface-id	Interface ID

Defaults N/A.

Command Mode Privileged EXEC mode.

Usage Guide N/A.

Configuration Examples N/A.

Related Commands

Command	Description

N/A.	N/A.

Platform Description N/A.

3 DLDP Commands

3.1 clear dldp

Use this command to clear statistics about the number of times that DLDP is down or up at a specified monitoring point for renewing statistics.

clear dldp [**interface** *interface-name* [*ip-address*]]

Parameter Description

Parameter	Description
interface-name	Name of an Layer 3 interface
ip-address	IP address of a peer device

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide DLDP records statistics about the number of times that DLDP is down or up. You can use this command to clear statistics about the number of times that DLDP is down or up at a specified monitoring point and renew statistics. If an L3 interface or a device IP address is specified, statistics about the number of times that DLDP is down or up on the interface at one or all monitoring points will be cleared. If no L3 interface or IP address is specified, statistics about the number of times that DLDP is down or up at all monitoring points on all interfaces will be cleared.

Configuration Examples The following example clears statistics about the number of times that DLDP is down or up at all monitoring points on all interfaces.

```
Ruijie#clear dldp
```

The following example clears statistics about the number of times that DLDP is down or up at all monitoring points on the interface GigabitEthernet 0/0.

```
Ruijie#clear dldp interface vlan 1
```

The following example clears statistics about the number of times that DLDP is down or up about the peer device 10.83.132.1 on the interface GigabitEthernet 0/0.

```
Ruijie# clear dldp interface GigabitEthernet 0/0 10.83.132.1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.2 dldp

Use this command to enable DLDP detection.

Use the **no** form of this command to restore the default setting.

dldp *ip-address* [*next-hop-ip*] [**interval** *tick* | **retry** *retry-num* | **resume** *resume-num*]

no dldp *ip-address*

Parameter Description

Parameter	Description
ip-address	IP address of the peer device to be detected
next-hop-ip	Next-hop IP address specified when the device to be detected belongs to another different network
interval *tick*	Detection interval. The value range is from 1 to 6000 in the unit of ticks, where 1 tick is equal to 10 milliseconds. The value must be an integral multiple of five.
retry *retry-num*	Number of retry times. The value range is from 1 to 3600.
resume *resume-num*	Number of recovery times of the link to the peer device to be detected, indicating the number of consecutive packets received before a down link turns up. The value range is from 1 to 200.

Defaults By default, *tick* is 100, indicating that the detection interval is 1 second.

The value of *retry-num* is 4, and the value of *resume-num* is 3.

Command Mode Interface configuration mode

Usage Guide You can use this command to enable DLDP detection to quickly detect Ethernet link faults.

Configuration Examples The following example enables DLDP detection for the device 10.83.132.10.

```
Ruijie(config)#int gi0/0
Ruijie(config-if-GigabitEthernet 0/0)#ip address 10.83.132.1 24
Ruijie(config-if-GigabitEthernet 0/0)#dldp 10.83.132.10
Ruijie(config-if-GigabitEthernet 0/0)#
```

The following example enables DLDP detection for the device 10.83.132.10 in another different network segment.

```
Ruijie#config
Ruijie(config)#int gi0/0
Ruijie(config-if-GigabitEthernet 0/0)#ip address 10.83.132.1 255.255.255.0
Ruijie(config-if-GigabitEthernet 0/0)#dldp 10.83.131.10 10.83.132.2
```

The following example disables DLDP detection for the device 10.83.132.10.

```
Ruijie#config
Ruijie(config)#int gi0/0
Ruijie(config-if-GigabitEthernet 0/0)#no dldp 10.83.132.10
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

3.3 dldp passive

Use this command to set DLDP to the passive mode.

Use the **no** form of this command to restore the default setting.

dldp passive

no dldp passive

Parameter Description	Parameter	Description
	N/A	N/A

Defaults The default is the active mode.

Command Mode Interface configuration mode

Usage Guide If DLDP is enabled on devices at both ends of a link on a network and ICMP Echo packets are sent to each other for link detection, excessive packets exist between the two devices. If only one device sends ICMP Echo packets to the peer device on which the same detection parameters are configured, the peer device can detect whether the packets arrive in time and whether the link between them is normal. This method saves bandwidth and CPU resources.

You can set DLDP to the active mode for one device to initiate ICMP Echo packets, and set DLDP to the passive mode for the other device to passively receive the packets.

Configuration Examples The following example sets DLDP to the passive mode.

```
Ruijie#config
Ruijie(config)#int gi0/0
Ruijie(config-if-GigabitEthernet 0/0)#ip address 10.83.132.1 255.255.255.0
//Set an IP address for vlan1.
Ruijie(config-if-GigabitEthernet 0/0)#dldp passive
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

3.4 dldp interval

Use this command to set the DLDP detection interval.

Use the **no** form of this command to restore the default setting.

dldp interval *tick*

no dldp interval

Parameter Description

Parameter	Description
tick	Detection interval (in ticks), in the range from 5 to 6000. The value must be a multiple of 5. (1tick = 10 milliseconds)

Defaults N/A

Command Mode Global configuration mode

Usage Guide This command is used to set the DLDP detection interval.

If a device does not receive the reply packets from the peer device within the specific period (the time of this period is equal to that of the *detection packet retransmission interval* multiplied by the *retry count*), the device takes the L3 port as DOWN (though the physical link is up). Once the device receives the reply packets from the peer device, the device takes the L3 port as UP.

Configuration Examples The following example sets the DLDP detection interval to 20 ticks.

```
Ruijie#config
Ruijie(config)#dldp interval 20
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.5 dldp retry

Use this command to set the DLDP retry count.

Use the **no** form of this command to restore the default setting.

dldp retry *retry-num*

no dldp retry

Parameter Description

Parameter	Description
retry-num	Retry count, in the range from 1 to 3600

Defaults The default is 3.

Command Mode	Global configuration mode
Usage Guide	This command is used to set the DLDP retry count.

Configuration Examples	The following example sets the DLDP retry count to 4.
	`Ruijie#config`
	`Ruijie(config)#dldp retry 4`

Related Commands

Command	Description
N/A	N/A

Platform Description	N/A

3.6 dldp resume

Use this command to set the DLDP recovery count.
Use the **no** form of this command to restore the default setting.
dldp resume *resume-num*
no dldp resume

Parameter Description

Parameter	Description
resume-num	Recovery count of the peer device link, in the range from 1 to 200. The parameter indicates the number of DLDP detection packets received consecutively from the peer device before the link status goes from DOWN to UP.

Defaults	The default is 3.
Command Mode	Global configuration mode
Usage Guide	This command is used to set the DLDP recovery count.

Configuration Examples	The following example sets the DLDP recovery count to 4.
	`Ruijie#config`
	`Ruijie(config)#dldp resume 4`

Related Commands

Command	Description
N/A	N/A

Platform	N/A

Description

3.7 show dldp

Use this command to display DLDP configuration information or statistics at various monitoring points.

show dldp [**interface** *interface-name*] [**statistic**]

Parameter Description

Parameter	Description
interface-name	Name of an L3 interface
statistic	Statistics

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide You can use this command with the keyword **statistics** to display statistics at all monitoring points on all interfaces or a specific Layer 3 interface. If a Layer 3 interface is specified, this command displays DLDP configuration and statistics at all monitoring points on the Layer 3 interface.

Configuration Examples The following example displays DLDP configuration information at all monitoring points on all interfaces.

```
Ruijie#show dldp
Interface  Type        Ip       Next-hop    Interval  Retry  Resume  State
---------  -------  -----------  -----------  --------  -----  ------
------
Gi0/0       Passive  192.168.6.3  192.168.2.2  10       5     3      Up
Gi0/1       Passive  192.168.7.3            10       5     3      Up
Gi0/2       Passive  192.168.3.3  192.168.4.2  10       5     3      Up
```

The following example displays DLDP configuration information at all monitoring points on the Layer 3 interface GigabitEthernet 0/0.

```
Ruijie#show dldp intface gigabitEthernet 0/0
Interface  Type        Ip       Next-hop    Interval  Retry  Resume  State
---------  -------  -----------  -----------  --------  -----  ------
------
Gi0/0       Passive  192.168.6.3  192.168.2.2  10       5     3      Up
```

```
The following example displays DLDP statistics at all monitoring points on all
interfaces.
Ruijie#show dldp statistic
Interface  Type        Ip      record-time  Up-count  Down-count
---------  -------  -----------  -----------  --------  ----------
```

```
Gi0/0       Passive  192.168.6.3  2h34m5s     10       9
Gi0/1       Passive  192.168.3.3  1d2h3m52s    10       9
```

The following example displays DLDP statistics at all monitoring points on the Layer 3 interface GigabitEthernet 0/0.

```
Ruijie#show dldp statistic interface Gi0/0
Interface  Type        Ip      record-time  Up-count  Down-count
---------  -------  -----------  -----------  --------  ----------
Gi0/0       Passive  192.168.6.3  2h34m5s     10       9
```

Field	Description
record-time	Time length for recording the number of times that DLDP is up or down. The time is displayed in *y***d**h**m**s format: y: year d: day h: hour m: minute s: second Using the *Up-count* and *Down-count* parameters, you can check statistics about the number of times that DLDP is up or down within this time length.
Up-count	Number of times that DLDP is up at the specific monitoring point
Down-count	Number times that DLDP is down at the specific monitoring point

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

4 VRRP Commands

4.1 show vrrp

Use this command to display the VRRP information.

show [**ipv6**] **vrrp** [**brief** | *grou*p]

Parameter Description

Parameter	Description
ipv6	(Optional) Applies to IPv6 VRRP.
brief	(Optional) Displays the brief of the VRRP group.
group	Number of the VRRP group to be displayed

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide If no optional parameter is used, the information of all VRRP groups is displayed.

Configuration Examples The following example displays the information of all VRRP groups:

```
Ruijie# show vrrp
FastEthernet 0/0 - Group 1
State is Backup
Virtual IP address is 192.168.201.1 configured
Virtual MAC address is 0000.5e00.0101
Advertisement interval is 3 sec
Preemption is enabled
min delay is 0 sec
Priority is 100
Master Device is 192.168.201.213 , pritority is 120
Master Advertisement interval is 3 sec
Master Down interval is 9 sec
FastEthernet 0/0 - Group 2
State is Master
Virtual IP address is 192.168.201.2 configured
Virtual MAC address is 0000.5e00.0102
Advertisement interval is 3 sec
Preemption is enabled
min delay is 0 sec
Priority is 120
Master Device is 192.168.201.217 (local), priority is 120
Master Advertisement interval is 3 sec
```

```
Master Down interval is 9 sec
Ruijie#
```

The following example displays the brief information of the VRRP group:

```
Ruijie# show vrrp brief
Interface    Grp Pri Time  Own Pre State   Master addr   Group addr
FastEthernet 0/0  1  100   -  -  P  Backup  192.168.201.213 192.168.201.1
FastEthernet 0/0   2   120  -   -  P  Master  192.168.201.217 192.168.201.2
Ruijie#
```

Related Commands

Command	Description
vrrp *group* **ip** *ipaddress* [**secondary**]	Enables the VRRP function and set the IP address for the virtual device.

Platform Description N/A

4.2 show vrrp interface

Use this command to display the information of the VRRP on the interface.

show [**ipv6**] **vrrp interface** *type number* [**brief**]

Parameter Description

Parameter	Description
ipv6	(Optional) Applies to IPv6 VRRP.
type	Interface type
number	Interface number
brief	(Optional) Displays the brief of the VRRP group on the interface.

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide N/A

Configuration Examples The following example displays the VRRP information on Ethernet interface E1/0.

```
Ruijie# show vrrp interface fastethernet 0/0
FastEthernet 0/0 - Group 1
State is Backup
Virtual IP address is 192.168.201.1 configured
Virtual MAC address is 0000.5e00.0101
Advertisement interval is 3 sec
Preemption is enabled
min delay is 0 sec
```

```
Priority is 100
Master Device is 192.168.201.213 , pritority is 120
Master Advertisement interval is 3 sec
Master Down interval is 9 sec
FastEthernet 0/0 - Group 2
State is Master
Virtual IP address is 192.168.201.2 configured
Virtual MAC address is 0000.5e00.0102
Advertisement interval is 3 sec
Preemption is enabled
min delay is 0 sec
Priority is 120
Master Device is 192.168.201.217 (local), priority is 120
Master Advertisement interval is 3 sec
Master Down interval is 9 sec
```

Related Commands

Command	Description
vrrp *group* **ip** *ip address* [**secondary**]	Enables the VRRP function and set the IP address for the virtual device

Platform Description N/A

4.3 show vrrp packets statistics

Use this command to display the statistics of the VRRP packets transmission.

show vrrp packet statistics [*interface-type interface-number*]

Parameter Description

Parameter	Description
interface-type interface-number	Interface type and number

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the statistics of VRRP packets transmitting on all interfaces.

```
Ruijie# show vrrp packet statistics

Total
  InReceives: 966043 packets, InOctets: 38641824, InErrors: 38826
```

```
  OutTransmits: 306079, OutOctets: 7798564
GigabitEthernet 3/0/1
  InReceives: 799665 packets, InOctets: 31986600, InErrors: 19657
  OutTransmits: 272931, OutOctets: 6675320
GigabitEthernet 3/0/2
  InReceives: 0 packets, InOctets: 0, InErrors: 0
  OutTransmits: 681, OutOctets: 16344
```

The following example displays the statistics of VRRP packets on the interface gigabitEthernet 3/0/1.

```
Ruijie#show vrrp packet statistics gigabitEthernet 3/0/1
GigabitEthernet 3/0/1
  InReceives: 799911 packets, InOctets: 31996440, InErrors: 19657
  OutTransmits: 273053, OutOctets: 6677760
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.4 vrrp accept_mode

Use this command to enable the packet accepting function on the IPv6 VRRP virtual router.
Use the **no** form of this command to disable this function.
vrrp ipv6 *group* **accept_mode**
no vrrp ipv6 *group* **accept_mode**

Parameter Description

Parameter	Description
group	VRRP group number

Defaults The master IPv6 VRRP is not allowed to accept packets whose destination IPv6 address is the IPv6 address of a virtual router. However, the NA and NS packets should be accepted regardless of the configuration of Accept_Mode. Also, the master IPv6 VRRP virtual router in the owner state will accept and process any packets whose destination IPv6 address is the IPv6 address of a virtual router, regardless of the configuration of Accept_Mode.

Command Mode Interface configuration mode

Usage Guide Configuration of the network interface is effective for the master virtual router.

⚠ Only IPv6 VRRP has this configuration mode.

Configuration Examples The following example enables the accept mode on the group 1:

```
vrrp ipv6 1 accept_mode
```

Platform Description N/A

4.5 vrrp authentication

Use this command to enable VRRP authentication.

Use the **no** form of this command to disable this function.

vrrp *group* **authentication** *string*

no vrrp *group* **authentication**

Parameter Description

Parameter	Description
group	VRRP group number
string	String for the VRRP group authentication (within 8 bytes, plaintext password)

Defaults This function is disabled by default. Even if the VRRP function is enabled, no authentication password is configured by default.

Command Mode Interface configuration mode

Usage Guide The devices in the same VRRP group must have the same authentication password configured. The plaintext authentication password cannot provide security. It aims only to prevent/prompt the incorrect VRRP configuration.

Configuration Examples The following example sets the authentication password for VRRP group 1.

```
vrrp 1 authentication x30dn78k
```

Platform Description N/A

4.6 vrrp bfd (Global Configuration Mode)

Use this command to enable the global BFD correlation for theIPv4 VRRP backup group to detect the master router status.

Use the **no** form of this command to remove the BFD correlation for IPv4 VRRP.

vrrp bfd *interface-type interface-number ip-address*

no vrrp bfd

Parameter Description

Parameter	Description
interface-type interface-number	Interface type and interface number
ip-address	Neighbor IP address

Defaults By default, the global BFD correlation for IPv4 VRRP is disabled.

Command Mode Global configuration mode

Usage Guide After the global BFD correlation for IPv4 VRRP is configured, the BFD correlation configuration for the IPv4 VRRP groups will be removed.
The global BFD correlation for IPv4 VRRP configured later will override the earlier configuration.
The IP address and BFD session of the interface must be configured before configuring the vrrp bfd command.
The global IPv4 VRRP BFD session applies to the IPv4 VRRP router which is consists of two devices only.

Configuration Examples The following example enables global BFD correlation for IPv4 VRRP.

```
Ruijie#configure terminal
Ruijie(config)#interface vlan 1
Ruijie(config-if-VLAN 1)#ip address 192.168.201.11 255.255.255.0
Ruijie(config-if-VLAN 1)#bfd interval 50 min_rx 50 multiplier 3
Ruijie(config-if-VLAN 1)#exit
Ruijie(config)# vrrp bfd vlan 1 192.168.201.10
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.7 vrrp bfd (Interface Configuration Mode)

Use this command to enable BFD correlation for the specified IPv4 VRRP group.
Use the **no** form of this command to remove the BFD correlation for the specified IPv4 VRRP group.
vrrp *group* **bfd** *ip-address*
no vrrp *group* **bfd** *ip-address*

Parameter Description

Parameter	Description
group	VRRP group ID
ip-address	Neighbor IP address

Defaults By default, no BFD correlation is configured for the IPv4 VRRP group on the interface.

Command Mode Interface configuration mode.

Usage Guide After the global BFD correlation for IPv4 VRRP is configured, the BFD correlation configuration for the IPv4 VRRP groups will be removed.
The IP address and BFD session of the interface must be configured before configuring the **vrrp bfd** command.

Configuration Examples The following example enables BFD correlation for the VRRP group.
On Switch 1:

```
Ruijie#configure terminal
Ruijie(config)#interface vlan 1
Ruijie(config-if-VLAN 1)#ip address 1.1.1.2 255.255.255.0
Ruijie(config-if-VLAN 1)#bfd interval 50 min_rx 50 multiplier 3
Ruijie(config-if-VLAN 1)#vrrp 1 ip 1.1.1.1
Ruijie(config-if-VLAN 1)#vrrp 1 bfd 1.1.1.3
```

On Switch 2:

```
Ruijie#configure terminal
Ruijie(config)#interface vlan 1
Ruijie(config-if-VLAN 1)#ip address 1.1.1.3 255.255.255.0
Ruijie(config-if-VLAN 1)#bfd interval 50 min_rx 50 multiplier 3
Ruijie(config-if-VLAN 1)#vrrp 1 ip 1.1.1.1
Ruijie(config-if-VLAN 1)#vrrp 1 bfd 1.1.1.2
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.8 vrrp delay

Use this command to set the reload latency of the VRRP group on the interface.
Use the **no** form of this command to restore the default setting.
vrrp delay { **minimum** *min-seconds* | **reload** *reload-seconds* }
no vrrp delay

Parameter Description

Parameter	Description
minimum *min-seconds*	When the interface is up, VRRP group shall be reloaded after at least min-seconds.
reload *reload-seconds*	The reload latency of the VRRP group. If the configured min-seconds is more than reload-seconds, the actual reload latency of the VRRP group will be min-seconds.

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide Use this command to set the reload latency of the VRRP group on the interface, when it is required that the VRRP group shall not be reloaded immediately after the system reloads or the interface is up. The reload latency range is 0-60.

Configuration Examples The following example sets the VRRP reload latency on E0 to 10 seconds. When E0 is up, VRRP group 1 shall be reloaded in 10 seconds.

```
interface FastEthernet 0/0
shutdown
ip address 10.0.1.1 255.255.255.0
vrrp delay minimum 10
vrrp 1 ip 10.0.1.20
no shutdown
show vrrp 1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4.9 vrrp description

Use this command to specify a descriptor for the VRRP.

Use the **no** form of this command to restore the default setting.

vrrp [**ipv6**] *group* **description** *text*

no vrrp [**ipv6**] *group* **description**

Parameter Description

Parameter	Description
ipv6	Applies to IPv6 VRRP.
group	VRRP group number
text	VRRP group descriptor

Defaults This function is disabled by default. Even if the VRRP function is enabled, no VRRP group descriptor is configured by default.

Command Mode Interface configuration mode

Usage Guide This command will set the descriptor for the VRRP group to facilitate the identification of the VRRP group.

Configuration Examples The following example labels the VRRP group 1 on Ethernet interface E0 as Building A – Marketing and Administration.

```
interface FastEthernet 0/0
ip address 10.0.1.1 255.255.255.0
vrrp 1 ip 10.0.1.20
vrrp 1 description "Building A - Marketing and Administration"
```

Related Commands

Command	Description
Ruijie(config-if)# **vrrp** *group* **ip** *ipaddress* [**secondary**]	Enables the VRRP function and set the IP address for the virtual device

Platform Description N/A

4.10 vrrp detection-vlan

Use this command to enable IPv4 VRRP packets to be sent to only the first or a specified Sub VLAN in a Super VLAN interface.

Use the **no** form of this command to enable IPv4 VRRP packets to be sent to all the Sub VLANs in a Super VLAN interface.

vrrp detection-vlan {first-subvlan | *subvlan-id*}

no vrrp detection-vlan

Parameter Description

Parameter	Description
first-subvlan	IPv4 VRRP packets are sent to only the first Sub VLAN in a Super VLAN interface.
subvlan-id	IPv4 VRRP packets are sent to a specified Sub VLAN in a Super VLAN interface.

Defaults By default, IPv4 VRRP packets are sent to only the first Sub VLAN in a Super VLAN interface.

Command Mode Interface configuration mode

Usage Guide Use this command to configure the mode in which IPv4 VRRP packets are sent to a Super VLAN interface. There are three modes in which IPv4 VRRP packets are sent to a Super VLAN interface: to only the first Sub VLAN, to a specified Sub VLAN, or all Sub VLANs.

⚠ This command is configured on a VLAN interface and applies only to Super VLAN interfaces.

Configuration The following example enables IPv4 VRRP packets to be sent to all Sub VLANs in Super VLAN 3.

Examples

```
Ruijie#configure terminal
Ruijie(config)# vlan 3
Ruijie(config-vlan)# supervlan
Ruijie(config-vlan)# subvlan 5-10
Ruijie(config-vlan)#exit
Ruijie(config)#interface vlan 3
Ruijie(config-if)# no vrrp detection-vlan
```

Related Commands

Command	Description
vrrp ip	Enables the VRRP function and set the IP address of the VRRP.

Platform Description N/A

4.11 vrrp ip

Use this command to enable VRRP on the interface and specify the related virtual IP address. Use the **no** form of this command to restore the default setting.

vrrp *group* **ip** *ipaddress* [**secondary**]

no vrrp *group* **ip** *ipaddress* [**secondary**]

Parameter Description

Parameter	Description
group	VRRP group number of the virtual device
ipaddress	IP address of the virtual device
secondary	Specifies the secondary IP address of the virtual device.

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide If the **secondary** parameter is not used, the IP address set here will become the master IP address of the virtual device. Note that if the VRRP group is using the IP address of the Ethernet interface, an error occurs when you remove the IP address of the VRRP group with the **no** command, because there are duplicated IP addresses in the LAN.

Configuration Examples The following example enables the VRRP function on Ethernet interface 0. The VRRP group number is 1, primary IP address of the virtual device is 10.0.1.20 and secondary IP address is 10.0.2.20.

```
interface FastEthernet 0/0
no switchport// Used on the switch only.
ip address 10.0.1.1 255.255.255.0
ip address 10.0.2.1 255.255.255.0 secondary
vrrp 1 ip 10.0.1.20
```

```
vrrp 1 ip 10.0.2.20 secondary
```

Related Commands	Command	Description
	show vrrp [**brief** | **group**]	Displays the VRRP configuration.

Platform Description N/A

4.12 vrrp ipv6

Use this command to enable IPv6 VRRP on the interface and specify the related virtual IPv6 address. Use the **no** form of the command to restore the default setting.

vrrp *group* **ipv6** *ipv6-address*

no vrrp *group* **ip** *ipv6-address*

Parameter Description	Parameter	Description
	group	VRRP group number of the virtual device
	ipv6-address	IPv6 address of the virtual device

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide IPv6 VRRP and IPv4 VRRP share group numbers ranging from 1 to 255. One VRRP group number of an interface is applicable to both IPv4 VRRP and IPv6 VRRP at the same time. The first configured address should be the link's local address, which cannot be deleted until the other virtual addresses are deleted.

Configuration Examples The following example enables the IPv6 VRRP function on Ethernet interface FastEthernet 0/0 with VRRP group number 1and virtual IPv6 address FE80::1 and 2001::1.

```
interface FastEthernet 0/0
no switchport
ipv6 enable
ip6 address 2001::2/64
vrrp 1 ipv6 FE80::1
vrrp 1 ipv6 2001::1
```

Related Commands	Command	Description
	show ipv6 vrrp [**brief | group**]	Displays the IPv6 VRRP configuration.

Platform Description N/A

4.13 vrrp preempt

Use this command to set the preemption mode of the VRRP group.

Use the **no** form of this command to restore the default setting.

vrrp [**ipv6**] *group* **preempt** [**delay** *seconds*]

no vrrp [**ipv6**] *group* **preempt** [**delay**]

Parameter Description

Parameter	Description
ipv6	Applies to IPv6 VRRP.
group	VRRP group number
delay *seconds*	(Optional)Specifies the delay before a device declares itself master. The default value is 0.

Defaults This function is disabled by default. Once the VRRP function is enabled, the VRRP group will work in the preemption mode by default.

Command Mode Interface configuration mode

Usage Guide If the VRRP group is working in the preemption mode, once a device finds its priority is higher than the priority of the master, it will become the master device of the VRRP group. If the VRRP group is not working in the preemption mode, even if a device finds its priority is higher than the master's priority, it will not become the master device of the VRRP group. In case the VRRP group is using the Ethernet interface IP address, the setting of the preemption mode does not make sense, because that VRRP group has the highest priority and thus automatically becomes the master device in the VRRP group.

Configuration Examples The following example enables IPv4 VRRP on interface GigabitEthernet 0/0.When VRRP group 1 finds its priority (200) is higher than that of the current master device, it will declare its preemption of master after a delay of 15 seconds.

```
Ruijie#configure terminal
Ruijie(config)#interface GigabitEthernet 0/0
// 'no switchport'
Ruijie(config-if-GigabitEthernet 0/0)#no switchport
Ruijie(config-if-GigabitEthernet 0/0)#ip address 10.0.1.1 255.255.255.0
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ip 10.0.1.20
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 preempt delay 15
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 priority 200
```

The following example enables IPv4 VRRP on interface GigabitEthernet 0/0. When VRRP group 1 finds its priority (200) is higher than that of the current master device, it will declare its preemption of master after a delay of 15 seconds.

```
Ruijie#configure terminal
Ruijie(config)#interface GigabitEthernet 0/0
// 'no switchport'
```

```
Ruijie(config-if-GigabitEthernet 0/0)#no switchport
Ruijie(config-if-GigabitEthernet 0/0)#ipv6 enable
Ruijie(config-if-GigabitEthernet 0/0)#ipv6 address 2001::2/64
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 FE80::1
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 2001::1
Ruijie(config-if-GigabitEthernet 0/0)#vrrp ipv6 1 preempt delay 15
Ruijie(config-if-GigabitEthernet 0/0)#vrrp ipv6 1 priority 200
```

Related Commands

Command	Description
vrrp *group* **ip** *ipaddress* [**secondary**]	Enables the VRRP function and set the IP address for the virtual device.
vrrp *group* **priority** *level*	Sets the VRRP group priority.

Platform Description N/A

4.14 vrrp priority

Use this command to specify the priority of the VRRP group. Use the **no** form of this command to restore the default setting.

vrrp [**ipv6**] *group* **priority** *level*

no vrrp [**ipv6**] *group* **priority**

Parameter Description

Parameter	Description
ipv6	Specifies the priority of the IPv6 VRRP group.
group	VRRP group number
level	VRRP group priority

Defaults This function is disabled by default. Once the VRRP function is enabled, the default priority of the VRRP group is 100.

Command Mode Interface configuration mode

Usage Guide N/A

Configuration Examples The following example sets the priority of VRRP group 1 as 254.

```
vrrp 1 priority 254
```

Related Commands

Command	Description
vrrp *group* **ip** *ipaddress* [**secondary**]	Enables the VRRP function and set the IP address for the virtual device.
vrrp *group* **preempt** [**delay** *seconds*]	Sets the VRRP in the preemption mode.

Platform Description N/A

4.15 vrrp timers advertise

Use this command to specify the interval for the master device to send the VRRP advertisement.
Use the **no** form of this command to restore the default setting.
vrrp [**ipv6**] *group* **timers advertise** { *advertise-interval* | **csec** *centisecond-interval* }
no vrrp [**ipv6**] *group* **timers advertise**

Parameter Description

Parameter	Description
ipv6	Applies to IPv6 VRRP.
group	VRRP group number
advertise-interval	Sets the interval time in seconds between sending VRRP advertisement.
csec *centisecond-interval*	Sets the interval time in milliseconds between sending advertisement frames from the master VRRP router in the backup group. The range is from 50 to 99. This value is not set by default. This parameter takes effect only for VRRPv3.

Defaults This function is disabled by default. Once the VRRP function is enabled, the default advertisement interval of the master device is one second.

Command Mode Interface configuration mode

Usage Guide If the current device becomes the master device in the VRRP group, it will notify its VRRP status, priority and other information by sending the VRRP advertisement in the set interval.
Based on the RFC specification, the maximum advertisement interval of the IPv4/IPv6 VRRPv3 group is 40 seconds. The advertisement interval can be configured larger than 40 seconds, but the effective advertisement interval is 40 seconds.

Configuration Examples The following example sets the VRRP advertisement interval as 4 seconds.

```
vrrp 1 timers advertise 4
```

Related Commands

Command	Description
vrrp *group* **ip** *ipaddress* [**secondary**]	Enables the VRRP function and set the IP address for the virtual device.
vrrp group timers learn	Enables the timer learning function.

Platform Description N/A

4.16 vrrp timers learn

Use this command to enable the timer learning function.

Use the **no** form of this command to restore the default setting.

vrrp [**ipv6**] *group* **timers learn**

no vrrp [**ipv6**] *group* **timers learn**

Parameter Description

Parameter	Description
ipv6	Applies to IPv6 VRRP.
group	VRRP group number

Defaults This function is disabled by default. Even if the VRRP function is enabled, the timer learning function is disabled by default.

Command Mode Interface configuration mode

Usage Guide Once the timer learning function is enabled, if the current device is a VRRP backup device, it will learn the VRRP advertisement interval from the VRRP advertisement of the master device, with which it calculates the master device's failure interval instead of the VRRP advertisement interval configured locally. This command may synchronize the VRRP advertisement timer with the master device.

Configuration Examples The following example enables the timer learning function on the IPv4 VRRP group 1.

```
vrrp 1 timers learn
```

The following example to enables the timer learning function on the IPv6 VRRP group 1.

```
vrrp ipv6 1 timers learn
```

Related Commands

Command	Description
vrrp *group* **ip** *ipaddress* [**secondary**]	Enables the VRRP function and set the IP address for the virtual device.
vrrp *group* **ipv6** *ipaddress*	Enables the VRRP function and set the IPv6 address for the virtual device.
vrrp *group* **timers advertise** *interval*	Sets the IPv4 VRRP advertising interval.
vrrp ipv6 *group* **timers advertise** *interval*	Sets the IPv6 VRRP advertising interval.

Platform Description N/A

4.17 vrrp track

Use these commands to enable the IPv4/IPv6 VRRP track in the interface configuration mode. Use the no form of these commands to restore the default setting.

vrrp *group* **track** { *interface-type interface-number* | **bfd** *interface-type interface-number ipv4-addess* } [*priority*]
vrrp ipv6 *group* **track** *interface-type interface-number* [*priority*]
no vrrp [**ipv6**] *group* **track** *interface-type interface-number*

Use these commands to enable VRRP IPv4/IPv6 address track. Use the **no** form of these commands to restore the default setting.
vrrp *group* **track** *ipv4-address* [**interval** *interval-value*] [**timeout** *timeout-value*] [**retry** *retry-value*] [*priority*]
vrrp ipv6 *group* **track** { *ipv6-global-address* | *ipv6-linklocal-address interface-type interface-number* } [**interval** *interval-value*] [**timeout** *timeout-value*] [**retry** *retry-value*] [*priority*]
no vrrp *group* **track** *ipv4-address*
no vrrp ipv6 *group* **track** { *ipv6-global-address* | *ipv6-linklocal-address interface-type interface-number* }

Use this command to disable the specified neighbor IP address track via BFD.
no vrrp *group* **track bfd** *interface-type interface-number ipv4-addess*

Parameter Description

Parameter	Description
group	VRRP group number
interface-type interface-number	Type of monitored interface
bfd *interface-type interface-number ipv4-addres*	Enables the specified neighbor IP address track via BFD.
ipv6	Applies to IPv6 VRRP.
ipv4-address	Monitored IPv4 address. With BFD configured, it refers to the neighbor IP address.
interval *interval-value*	The interval of time to probe whether the monitored ip address is reachable or not. If this parameter is not selected, the default value is 3s.
timeout *timeout-value*	The timeout time of the unreachable monitored ip address. If this parameter is not selected, the default value is 1s.
priority	VRRP priority change range when the interface or ip address reachability status changes. If this parameter is not selected, the default value is 10.
ipv6-global-addres	Global unicast IPv6 address
ipv6-linklocal-addree	Local link IPv6 address

Defaults This function is disabled by default. Even if the VRRP function is enabled, no interface or IP address is specified.

Command Mode Interface configuration mode

Usage Guide This command can be used to monitor the outlet links. Note that layer-3 routable logical interfaces can be monitored (such as Routed Port, SVI, Loopback and Tunnel). This command can also be used to monitor the reachability of the specified IP address.

Configuration Examples The following example enables the VRRP group 1 to monitor the routed port Fa1/1. If the Fa1/1 link is disconnected, the priority of the VRRP group decreases by 30. When the Fa1/1 link recovers, the priority of VRRP group 1 is restored.

```
vrrp 1 track FastEthernet 1/1 30
```

The following example sets the VRRP to track the specified neighbor IP address 192.168.1.3 through BFD:

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#interface FastEthernet 0/1
Ruijie(config-if)#no switchport //used on the switch.
Ruijie(config-if)#ip address 192.168.1.1 255.255.255.0
Ruijie(config-if)#bfd interval 50 min_rx 50 multiplier 3
Ruijie(config)#interface FastEthernet 0/2
Ruijie(config-if)#no switchport  //used on the switch
Ruijie(config-if)#ip address 192.168.201.17 255.255.255.0
Ruijie(config-if)#vrrp 1 priority 120
Ruijie(config-if)#vrrp 1 ip 192.168.201.1
Ruijie(config-if)#vrrp 1 track bfd FastEthernet 0/1 192.168.1.3 30
Ruijie(config-if)#end
```

Related Commands

Command	Description
vrrp *group* **ip** *ipaddress* [**secondary**]	Enables the VRRP function and set the IP address for the virtual device.
vrrp *group* **priority** *level*	Sets the VRRP group priority.

Platform Description N/A

4.18 vrrp version

Use this command to configure the version of sending the IPv4 VRRP multicast packets.
For the IPv4 VRRP, there are two versions: VRRPv2 and VRRPv3.
Use the no form of this command to restore the default setting.
vrrp *group* **version** { **2** | **3** }
no vrrp *group* **version**

Parameter Description

Parameter	Description
2	Uses the VRRPv2 version to send the packets.

3	Uses the VRRPv3 version to send the packets.

Defaults The default is VRRPv2.

Command Mode Interface configuration mode

Usage Guide Considering the compatibility of VRRPv2 and VRRPv3 for the IPv4 VRRP, you can choose the version of VRRP packets based on the actual network environment. VRRPv2 is based on RFC3768 and VRRPv3 is based on RFC 5798. This command is applicable to IPv4 VRRP only.

Configuration Examples The following example configures the version of sending the IPv4 VRRP packets on the interface gi4/1.

```
vrrp 1 version 3
```

Related Commands

Command	Description
vrrp *group* **ip** *ipaddress* [**secondary**]	Enables the VRRP function and set the IP address for the virtual device.
vrrp *group* **timers advertise** *interval*	Sets the interval of sending the VRRP advertisement.

Platform Description N/A

5 VRRP Plus Commands

5.1 show vrrp balance

Use this command to display the VRRP Plus brief or details.

show [**ipv6**] **vrrp balance** [**brief** | *group*]

Parameter Description

Parameter	Description
brief	(Optional) Displays the VRRP Plus brief.
ipv6	(Optional) Displays the IPv6 VRRP Plus configuration.
group	(Optional) Displays the VRRP Plus details.

Defaults N/A

Command Mode Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide If no optional parameter is used, the details of all VRRP Plus group are displayed.

Configuration Examples The following example displays the details of all VRRP Plus groups.

```
Ruijie#show vrrp balance
VLAN 1 - Group 1
  State is BVG
  Virtual IP address is 192.168.1.54
  Hello time 1 sec, hold time 3 sec
  Load balancing: host-dependent
  Redirect time 300 sec, forwarder time-out 14400 sec
  Weighting 90 (configured 100), thresholds: lower 1, upper 100
    Track object 1, state: down, decrement weight: 10
  There are 2 forwarders
  Forwarder 1 (local)
    MAC address:
      0000.5e00.0101
    Owner ID is 00d0.f822.33ab
  Forwarder 2
    MAC address:
      001a.a916.0201
Owner ID is 00d0.f822.8800
The following example shows the brief of the VRRP Plus group.
Ruijie# show vrrp balance brief
Interface  Grp   State     Group Addr      MAC addr
```

```
VLAN 1      1    BVG    192.168.1.1     0000.5e00.0101
```

Related Commands

Command	Description
vrrp *group* **balance**	Enables the VRRP Plus function.
vrrp *group* **load-balancing** { **host-dependent** | **round-robin** | **weighted** }	Sets the load balancing policy of the VRRP Plus.
show vrrp balance interface *type number* [**brief**]	Displays the VRRP Plus running status of the specified interface.

Platform Description N/A

5.2 show vrrp balance interface

Use this command to display the actions of the VRRP Plus group on the specified interface.

show [**ipv6**] **vrrp balance interface** *type number* [**brief**]

Parameter Description

Parameter	Description
interface *type number*	Specifies the interface type and number.
ipv6	(Optional) Displays the IPv6 VRRP Plus groups.
brief	(Optional) Displays the brief information.

Defaults N/A

Command Mode Privileged EXEC mode/ Global configuration mode/Interface configuration mode

Usage Guide N/A

Configuration Examples The following example displays the actions of the VRRP Plus on FastEthernet 0/0.

```
Ruijie# show vrrp balance interface FastEthernet 0/0
FastEthernet 0/0 - Group 1
  State is BVG
  Virtual IP address is 192.168.1.54
  Hello time 1 sec, hold time 3 sec
  Load balancing: host-dependent
  Redirect time 300 sec, forwarder time-out 14400 sec
  Weighting 90 (configured 100), thresholds: lower 1, upper 100
    Track object 1, state: down, decrement weight: 10
  There are 2 forwarders
  Forwarder 1 (local)
    MAC address:
```

```
    0000.5e00.0101
  Owner ID is 00d0.f822.33ab
Forwarder 2
  MAC address:
    001a.a916.0201
  Owner ID is 00d0.f822.8800
```

Related Commands

Command	Description
vrrp *group* **balance**	Enables the VRRP Plus function.
vrrp *group* **load-balancing** { **host-dependent** | **round-robin** | **weighted** }	Sets the load balancing policy of the VRRP Plus.
show vrrp balance interface *type number* [**brief**]	Displays the VRRP Plus running status of the specified interface.

Platform Description N/A

5.3 vrrp balance

Use this command to enable the VRRP Plus function.

Use the **no** form of this command to disable this function.

vrrp [**ipv6**] *group* **balance**

no vrrp [**ipv6**] *group* **balance**

Parameter Description

Parameter	Description
ipv6	Applies to IPv6.
group	Enables the VRRP Plus function on the VRRP of specified group ID.

Defaults VRRP Plus is disabled by default.

Command Mode Interface configuration mode

Usage Guide N/A

Configuration Examples The following example enables the VRRP Plus function on the Layer 3 interface FastEthernet0/0.

```
Ruijie#config
Ruijie(config)#interface GigabitEthernet 0/0
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ip 192.168.1.1
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 balance
```

Related Commands

Command	Description
vrrp load-balancing	Sets the load balancing policy of the VRRP Plus.
show vrrp balance	Displays the VRRP Plus running status.
show vrrp balance interface	Displays the VRRP Plus running status of the specified interface.

Platform Description N/A

5.4 vrrp forwarder preempt

Use this command to enable the forwarding preemption on the VRRP Plus backup group.
Use the **no** form of this command to disable this function.
vrrp [**ipv6**] *group* **forwarder preempt**
no vrrp [**ipv6**] *group* **forwarder preempt**

Parameter Description

Parameter	Description
ipv6	Applies to IPv6.
group	VRRP group number. The range is from 1 to 255.

Defaults By default, forwarding preemption is enabled.

Command Mode Interface configuration mode

Usage Guide The VRRP Plus function should be configured before enabling forwarding preemption.

Configuration Examples The following example enables the forwarding preemption function of the VRRP Plus backup group on the Layer3 interface FastEthernet0/0.

```
Ruijie#config
Ruijie(config)#interface GigabitEthernet 0/0
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ip 192.168.1.1
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 balance
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 forwarder preempt
```

Related Commands

Command	Description
vrrp *group* **balance**	Enables the VRRP Plus function.
show vrrp balance [**brief** | *group*]	Displays the VRRP Plus running status.

show vrrp balance interface *type number* [**brief**]	Displays the VRRP Plus running status of the specified interface.

Platform Description N/A

5.5 vrrp load-balancing

Use this command to set the VRRP Plus load balancing policy.
Use the **no** form of this command to restore the default setting.
vrrp [**ipv6**] *group* **load-balancing** { **host-dependent** | **round-robin** | **weighted** }

no vrrp [**ipv6**] *group* **load-balancing** { **host-dependent** | **round-robin** | **weighted** }

Parameter Description

Parameter	Description
group	Specifies the VRRP group ID.
ipv6	Applies to IPv6.
host-dependent	Sets the host-dependent load balancing policy, so as to use the different virtual MACs to reply the host's ARP request based on different hosts.
round-robin	Sets the round-robin balancing policy, so as to use the different virtual MACs to reply the host's ARP request in turn, which is the default setting.
weighted	Sets the weight balancing policy, so as to perform the ARP reply based on the device weight of the backup group.

Defaults The default is round-robin.

Command Mode Interface configuration mode

Usage Guide The VRRP Plus function should be enabled before setting the VRRP Plus load balancing policy.

Configuration Examples The following example sets the load balancing policy of the VRRP Plus group1 as host-dependent.

```
Ruijie(config-if)# vrrp 1 ip 192.168.1.1
Ruijie(config-if)# vrrp 1 balance
Ruijie(config-if)# vrrp 1 load-balancing host-dependent
```

Related Commands

Command	Description
vrrp *group* **balance**	Enables the VRRP Plus function.
show vrrp balance [**brief** | *group*]	Displays the VRRP Plus running status.

show vrrp balance interface *type number* [**brief**]	Displays the VRRP Plus running status o the specified interface.

Platform Description N/A

5.6 vrrp timers redirect

Use this command to set the redirection interval and timeout of the proxy virtual MAC address for the VRRP Plus backup group.

Use the **no** form of this command to restore the default value.

vrrp [**ipv6**] *group* **timers redirect** *redirect timeout*

no vrrp [**ipv6**] *group* **timers redirect**

Parameter Description

Parameter	Description
group	VRRP Plus backup group ID, in the range of 1 to 255.
ipv6	Applies to IPv6.
redirect	The redirection time, 300 seconds (namely 5 minutes) by default, in the range of 0 to 3,600.
timeout	The timeout, 14,400 seconds (namely 4 hours) by default, in the range of (redirect+600) to 64,800.

Defaults The default redirection interval is 300 seconds and redirection timeout is 14,400 seconds.

Command Mode Interface configuration mode

Usage Guide The VRRP Plus function should be enabled before setting the redirection interval and timeout of the proxy virtual MAC address for the VRRP Plus backup group.

Configuration Examples The following example sets the redirection interval and timeout of the proxy virtual MAC address for the VRRP Plus backup group.

```
Ruijie(config-if)# vrrp 1 ip 192.168.1.1
Ruijie(config-if)# vrrp 1 balance
Ruijie(config-if)# vrrp 1 timers redirect 300 6000
```

Related Commands

Command	Description
vrrp *group* **balance**	Enables the VRRP Plus function.
show vrrp balance [**brief** | *group*]	Displays the VRRP Plus running status.
show vrrp balance interface *type number* [**brief**]	Displays the VRRP Plus running status o the specified interface.

Platform Description N/A

5.7 vrrp weighting

Use this command to set the weight and threshold of the VRPP Plus backup group.

Use the **no** form of this command to restore the default setting.

vrrp [**ipv6**] *group* **weighting** *maximum* [**lower** *lower*] [**upper** *upper*]

no vrrp [**ipv6**] *group* **weighting**

Parameter Description

Parameter	Description
ipv6	Applies to IPv6.
group	VRRP Plus backup group ID, in the range of 1 to 255.
maximum	Weight, 100 by default, in the range of 2 to 254.
lower	Weight lower, 1 by default, in the range of 1 to (maximum-1)
upper	Weight upper, 100 by default, in the range of lower to maximum.

Defaults VRRP Plus backup group weight: 100
Weight lower: 1
Weight upper: 100

Command Mode Interface configuration mode

Usage Guide The VRRP Plus function should be enabled before setting the weight and threshold of the VRRP Plus backup group

Configuration Examples The following example sets the weight and threshold of the VRRP Plus group1.

```
Ruijie(config-if)# vrrp 1 ip 192.168.1.1
Ruijie(config-if)# vrrp 1 balance
Ruijie(config-if)# vrrp 1 weighting 50 lower 30 upper 50
```

Related Commands

Command	Description
vrrp *group* **balance**	Enables the VRRP Plus function.
show vrrp balance [**brief** | *grou*p]	Displays the VRRP Plus running status.
show vrrp balance interface *type number* [brief]	Displays the VRRP Plus running status of the specified interface.

Platform Description N/A

5.8 vrrp weighting track

Use this command to set the track object corresponding to the weight of the VRRP Plus backup group. Use the **no** form of this command to delete the corresponding track object.

vrrp [**ipv6**] *group* **weighting track** *object-number* [**decrement** *value*]

no vrrp [**ipv6**] *group* **weighting track** *object-number*

Parameter Description

Parameter	Description
ipv6	Applies to IPv6.
group	VRRP Plus backup group ID, in the range of 1 to 255.
object-number	The ID of the track object created by the track module, in the range of 1 to 700.
value	Weight decrement performed when the track object is down, which is 10 by default and is in the 1 to 255.

Defaults No track is configured by default.

Command Mode Interface configuration mode

Usage Guide The VRRP Plus function should be enabled before setting the track object corresponding to the weight of the VRRP Plus backup group.

Configuration Examples The following example sets the track object corresponding to the weight of the VRRP Plus backup group 1.

```
Ruijie(config)#track 1 interface gigabitEthernet 0/14 line-protocol
Ruijie(config)#interface GigabitEthernet 0/0
Ruijie(config-if)# vrrp 1 ip 192.168.1.1
Ruijie(config-if)# vrrp 1 balance
Ruijie(config-if)# vrrp 1 weighting track 1 decrement 50
```

Related Commands

Command	Description
vrrp *group* **balance**	Enables the VRRP Plus function.
show vrrp balance [**brief** | *group*]	Displays the VRRP Plus running status.
show vrrp balance interface *type number* [**brief**]	Displays the VRRP Plus running status of the specified interface.

Platform Description N/A

6 BFD Commands

6.1 bfd

Use this command to set the BFD session parameters.

Use the **no** form of this command to remove the setting.

bfd interval *milliseconds* **min_rx** *milliseconds* **multiplier** *multiplier-value*

no bfd interval

Parameter Description

Parameter	Description
interval milliseconds	Interval of sending the BFD control messages to the BFD session neighbor. milliseconds: The range is from 50 to 10,000.
min_rx milliseconds	Expected interval of receiving the BFD control messages from the BFD session neighbor. milliseconds: The range is from 50 to 10,000.
multiplier multiplier-value	Count of BFD control message not received from the peer in the configured interval. multiplier-value: The range is from 3 to 50.

Defaults No BFD session parameter is configured by default.

Command Mode Interface configuration mode

Usage Guide Those parameters must be configured before enabling the BFD session.

The express forwarding must be enabled before enabling BFD on the routers.

Configuration Examples The following example configures the BFD session parameter on routed port FastEthernet 0/2.

```
Ruijie(config)# interface fastEthernet 0/2
Ruijie(config)# no switchport
Ruijie(config-if)# bfd interval 100 min_rx 100 multiplier 3
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.2 bfd bind peer-ip

Use this command to create a BFD session to correlate with an interface.

Use the **no** form of this command to remove this setting.

bfd bind peer-ip *ip-address* [**source-ip** *ip-address*] **process-pst**

no bfd bind peer-ip *ip-address*

Parameter Description

Parameter	Description
peer-ip ip-address	The peer IP address to be detected, which must be directly connected to the Layer3 interface.
source-ip ip-address	Source IP address for sending the BFD packets, which avoids the packets dropped by the URPF in case that this function is used with other functions such the URPF at the same time.
process-pst	Correlates BFD for the Layer3 interface.

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide Note that this command must be configured a Layer3 interface and the peer IP address detected must be the address directly-connected to the interface.

Configuration Examples The following example detects the peer 1.1.1.2 through BFD on the routed port to generate the BFD status of the interface.

```
Ruijie(config)# interface gigabitEthernet 0/2
Ruijie(config-if -GigabitEthernet 0/2)#no sw
Ruijie(config-if -GigabitEthernet 0/2)#ip address 1.1.1.1 255.255.255.0
Ruijie(config-if -GigabitEthernet 0/2)#bfd bind peer-ip 1.1.1.2 source-ip
1.1.1.1 process-pst
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.3 bfd cpp

Use this command to enable the BFD protection policy.

Use the **no** form of this command to disable this function.

bfd cpp
no bfd cpp

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode Global configuration mode

Usage Guide BFD protocol is so sensitive that if the device with BFD function enabled suffers from attack (for example, a large amount of Ping packets attack the device), which lead to the BFD session turbulence, the device can be protected by enabling the BFD protection policy. However, if the BFD function and the BFD protection policy are enabled at the same time, the loss of BFD packets on the attacked device occurs when the packets sent from the last-hop device go through this device, influencing the BFD session establishment between the last-hop device and other devices. This function is valid only for the switches.

Configuration Examples The following example enables the BFD protection policy.

```
Ruijie(config)# bfd cpp
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6.4 bfd echo

Use this command to enable echo mode.
Use the **no** form of this command to disable echo mode.
bfd echo [one-arm]
no bfd echo

Parameter Description

Parameter	Description
one-arm	Indicates the BFD one-arm echo mode.

Defaults The echo mode is disabled by default.
The one-arm echo mode is disabled by default.

Command Mode Interface configuration mode

Usage Guide By default, with BFD session parameter configured, the system enables the echo mode automatically and disables the one-arm echo mode. The minimum sending and receiving interval for the echo packets are the values of the configured **interval** *milliseconds* and **min_rx** *milliseconds.*
This command cannot be configured on the AP port.
Before enabling BFD echo mode or BFD one-arm echo mode, it is necessary to use the **no ip redirects** command to disable the ICMP redirection messages sending on the neighbor device of the BFD session, use the **no ip deny land** to disable the DDOS (Land-based attack prevention) function.
With both ends of the BFD session enabled, the echo mode takes effect.
With one end of the BFD session enabled, the one-arm echo mode takes effect.
In the process that the forwarding plane of the peer device returns echo packets transmitted by the local end to the local end, the echo packets may be lost due to congestion of the peer device, causing a session detection failure. In this case, configure Quality of Service (QoS) policies to ensure that echo packets are processed preferentially or disable the echo function.
The echo detection function of BFD does not support multi-hop detection. Ensure that the echo function is disabled when configuring multi-hops.

Configuration Examples The following example enables the echo mode on the routed port FastEthernet 0/2:

```
Ruijie(config)# interface fastEthernet 0/2
Ruijie(config)# no switchport
Ruijie(config-if)# bfd echo
```

The following example enables the one-arm echo mode on the routed port FastEthernet 0/2:

```
Ruijie(config)# interface fastEthernet 0/2
Ruijie(config)# no switchport
Ruijie(config-if)# bfd echo one-arm
```

Related Commands

Command	Description
bfd	Configures the BFD session parameter.
bfd slow-timer	Configures the slow-timer time.

Platform Description N/A

6.5 bfd slow-timer

Use this command to set the slow timer, which is used to send the BFD packets in the BFD asynchronous mode.
Use the **no** form of this command to restore the default setting.
bfd slow-timer [*milliseconds*]
no bfd slow-timer

Parameter Description

Parameter	Description
milliseconds	BFD slow-timer time. The range is from 1,000 to 30,000. The unit is millisecond.

Defaults The default slow-timer is 2000 milliseconds.

Command Mode Global configuration mode

Usage Guide N/A

Configuration Examples The following example sets the slow-timer to 14,000 milliseconds:

```
Ruijie(config)# bfd slow-timer 14000
```

Related Commands

Command	Description
bfd echo	Enables the BFD echo function

Platform Description N/A

6.6 bfd up-dampening

Use this command to set the BFD up-dampening time.
Use the **no** form of this command to restore the default setting.
bfd up-dampening [*milliseconds*]
no up-dampening

Parameter Description

Parameter	Description
milliseconds	(Optional) Sets the BFD up-dampening time. The range is from 0 to 300,000. The unit is millisecond.

Defaults The default is 0 millisecond, which means that the notification is sent to the related application once the session state is UP.

Command Mode Interface configuration mode

Usage Guide N/A

Configuration The following example sets the BFD up-dampening time to 60,000 milliseconds:

Examples

```
Ruijie(config)# bfd up-dampening 60000
```

Related Commands

Command	Description
bfd	Configures the BFD session parameter.

Platform Description N/A

6.7 show bfd neighbors

Use this command to display the BFD session parameters.

show bfd neighbors [**vrf** *vrf-name*] [**client** { **ap** | **bgp | isis** | **ospf | ospfv3** | **rip** | **vrrp** | **static-route** | **pbr** | **vrrp-balance** | **bgp-lsp** | **ldp-lsp** | **static-lsp** | **backward-lsp-with-ip** | **pst** }] [**ipv4** *ip-addess* | **ipv6** *ip-addess*] [**details**]

Parameter Description

Parameter	Description
vrf *vrf-name*	(Optional) sets the neighbor VRF name.
client	(Optional) specifies the routing protocol.
ap	Displays the BFD session configuration for Layer 3 aggregate ports.
bgp	Displays the BFD session configuration for BGP.
isis	Displays the BFD session configuration for ISIS.
ospf	Displays the BFD session configuration for OSPF.
ospfv3	Displays the BFD session configuration for OSPFv3.
rip	Displays the BFD session configuration for RIP.
vrrp	Displays the BFD session configuration for VRRP.
static-route	Displays the BFD session configuration for the static route.
pbr	Displays the BFD session configuration for PBR.
vrrp-balance	Displays the BFD session configuration for the VRPP.
bgp-lsp	Displays the BFD session configuration for the BGP-LSP.
ldp-lsp	Displays the BFD session configuration for the LDP-LSP.
backward-lsp-with-ip	Displays the BFD session configuration for the LSP backward IP co-operation.
static-lsp	Displays the BFD session configuration for the static LSP co-operation.
pst	Displays the BFD session configuration and the Layer3 interface status.
ipv4 *ip-address*	(Optional) Displays the session information of the specified IPv4 neighbor.
ipv6 *ip-address*	(Optional) Displays the session information of the specified IPv6 neighbor.
details	(Optional) Displays the configurations in detail.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide In the information displayed by the **show bfd neighbors** command, the OurAddr field means the source address of the session. The "-" is displayed if the source address is not specified, and it occurs in the BFD session for the LSP backward IP correlation.

Configuration Examples The following example displays the BFD session configuration.

```
Ruijie# sh bfd neighbors
IPV4 sessions: 1, UP: 1
IPV6 sessions: 0, UP: 0
OurAddr       NeighAddr    LD/RD      RH  Holdown(mult)  State  Int
192.168.24.2 192.168.24.1  8192/8192  Up    0(3)     Up  GigabitEthernet 0/1
```

The following example displays the BFD session configuration in detail.

```
Ruijie#sh bfd neighbors
IPV4 sessions: 1, UP: 1
IPV6 sessions: 0, UP: 0
OurAddr       NeighAddr     LD/RD      RH/RS    Holdown(mult)  State  Int
192.168.24.2   192.168.24.1   8192/8192    Up     0(3   )       Up
GigabitEthernet 0/1
Session state is Up and using echo function with 50 ms interval.
Local Diag:   0,       Demand mode:   0,      Poll bit:   0
MinTxInt: 3000000,        MinRxInt: 3000000,         Multiplier:   3
Received MinRxInt 3000000, Multiplier: 3
Holdown (hits): 9000(0), Hello (hits): 3000(36)
Rx Count: 127, Rx Interval (ms) min/max/avg: 40/999/999
Tx Count: 135, Tx Interval (ms) min/max/avg: 1000/1000/999
Registered protocols: VRRP
Uptime: 0:01:19
Last packet:
 Version        :        1              - Diagnostic    : 0
 State bit      :       Up              - Demand bit    : 0
 Poll bit       :        0              - Final bit     : 0
 Multplier      :        3              - Length        : 24
 My Discr       :     8192              - Your Discr    : 8192
 Min tx interval  :   3000000             - Min rx interval: 3000000
 Min Echo interval:    50000
```

The following example displays the BFD session configuration for aggregate ports.

```
Ruijie#show bfd neighbors client ap
IPV4 sessions: 1, UP: 0
IPV6 sessions: 0, UP: 0
```

```
OurAddr       NeighAddr      LD/RD     RH/RS   Holdown(mult) State  Int
192.168.23.1   192.168.23.2    8192/0    Admin    0(3   )      Down
GigabitEthernet 0/2 (AP 1)
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

7 IP Event Dampening

7.1 dampening

Use this command to enable the IP event dampening function on the interface. Use the **no** or **default** form of this command to disable this function.

dampening [*half-life-period* [*reuse-threshold suppress-threshold max-suppress* [**restart** [*restart-penalty*]]]]

no dampening

default dampening

Parameter Description

Parameter	Description
half-life-period	Configures the half-life period of suppression penalty. The range is from 1 to 30. The unit is seconds. The default value is 5 seconds.
reuse-threshold	Configures the penalty threshold to unsuppress the interface. The range is from 1 to 20,000. The default value is 1,000.
suppress-threshold	Configures the penalty threshold to suppress the interface. The range is from 1 to 20,000. The default value is 2,000.
max-suppress	Configures the maximum suppress time. The range is from 1 to 255. The default value is 4 times of the *half-life-period.*
restart	Activates the restart penalty.
restart-*penalty*	Configures the initial penalty value on the interface. The range is from 1 to 20,000. The default value is 2,000.

Defaults IP event dampening is disabled by default.

Command mode Interface configuration mode.

Usage Guide This function will influence the modules of the directly-connected/host route, static route, dynamic route and VRRP. If one interface meets the configuration condition of this command, which is in the suppression status, the above influenced modules consider the status of this interface as DOWN, so as to delete the corresponding route and not transcieve the data packets on this interface.

Re-configuring the dampening command on the interface that has been configured this command makes all dampening information on this interface cleared. However, the interface flapping times will be remained unless use the clear counters command to clear the statistical information of the interface.

Too small max-suppress configured may cause the maximum penalty value obtained from the calculation smaller than the suppression threshold to make this interface will not be suppressed forever. Therefore, it belongs to the erroneous configuration. In this case, the following message will prompt for the configuration error:

% Maximum penalty (10) is less than suppress penalty (2000). Increase maximum suppress time
Besides, when configuring this command, it will prompt the following message as well if the system memory is not enough to save this configuration:
% No memory, configure dampening fail!
For the interface layer switching of the switches (Layer-3 interface to the Layer-2 interface), for example, if one routed port is switched to the switch port, the dampening command configured on this interface will be removed.
Note: For routers, this function can be configured on the master interface only. This function takes effect for all sub-interfaces of the master interface with this command configured, but this command cannot be configured on the sub-interface directly. This command cannot be configured on the virtual template.

Configuration Examples The following example configures the IP event dampening function.

```
Ruijie(config)#interface gigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# no switchport
Ruijie(config-if-GigabitEthernet 0/1)# dampening 30 1500 10000 100
```

Related Commands

Command	Description
clear counters	Clears the interface counters.
show dampening interface	Displays the statistics of the dampening interface.
show interface dampening	Displays details of the dampening interface.

Platform Description N/A

7.2 show dampening interface

Use this command to show the statistics of the dampening interface.
show dampening interface

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command mode Privileged EXEC mode/ global configuration mode/ interface configuration mode

Usage Guide N/A

Configuration The following example displays the statistics of the dampening interface.

Examples

```
Ruijie# show dampening interface
3 interfaces are configured with dampening.
No interface is being suppressed.
```

Related Commands

Command	Description
dampening	Enables the IP event dampening function on the interface.
clear counters	Clears the interface counters.
show interface dampening	Displays details of IP event dampening configuration.

Platform Description N/A

7.3 show interface dampening

Use this command to display the details of IP event dampening configuration.

show interface [*interface-Id*] **dampening**

Parameter Description

Parameter	Description
interface-id	Interface name

Defaults N/A

Command mode Privileged EXEC mode/ global configuration mode/ interface configuration mode

Usage Guide If the interface-id is specified, only the dampening information of this specified interface is displayed.

Configuration Examples The following example shows the details of IP event dampening configuration.

```
Ruijie# show interface dampening Ethernet1/0
Flaps  Penalty  Supp ReuseTm HalfL ReuseV SuppV MaxSTm MaxP Restart
 0     0      FALSE   0     5    1000  2000   20    16000    0
```

Domain	Description
Flaps	Interface flapping times.
Penalty	The current penalty value on the interface.
Supp	Suppressed or not.
ReuseTm	Time to unsuppress the interface, in seconds.
HalfL	Half-life period, in seconds.

ReuseV	Unsuppressed threshold.
SuppV	Start suppression threshold.
MaxSTm	Maximum suppression time.
MaxP	Maximum penalty value.
Restart	The initial penalty value on the interface.

Related Commands

Command	Description
dampening	Enables the IP event dampening function.
clear counters	Clears the interface counters.
show dampening interface	Displays statistics of the dampening interface.

Platform Description N/A

8 VSU Commands

8.1 dad relay enable

Use this command to enable the Dual-Active Detection (DAD) relay function.

Use the **no** form of this command to restore the default setting.

dad relay enable

no dad relay enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Interface configuration mode

Usage Guide This command is only supported on the aggregate port (AP).

Configuration Examples The following example enables the AP-based DAD relay function.

```
Ruijie(config)# interface aggregateport 1
Ruijie(config-if)# dad relay enable
```

The following example disables the AP-based DAD relay function.

```
Ruijie(config)# interface aggregateport 1
Ruijie(config-if)# no dad relay enable
```

Related Commands

Command	Description
dual-active detection	Configures DAD.
dual-active pair interface	Configures a pair of Bidirectional Forwarding Detection (BFD)-based DAD interfaces.
dual-active exclude interface	Configures an exclude interface of DAD.
show switch virtual dual-active	Displays the configuration and status of DAD.

Platform Description N/A

8.2 dual-active auto-recovery enable

Use this command to enable the automatic recovery without restart function in recovery mode upon a master device abnormality. Use the **no** form of this command to disable the function.

dual-active auto-recovery enable

no dual-active auto-recovery enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults The automatic recovery without restart function in recovery mode is disabled by default.

Command Mode config-vs-domain configuration mode

Usage Guide This command is available in VSU mode.

Configuration Examples The following example disables the automatic recovery without restart function in recovery mode.

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)#
Ruijie(config-vs-domain)#no dual-active auto-recovery enable
```

The following example enables the automatic recovery without restart function in recovery mode.

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)#
Ruijie(config-vs-domain)# dual-active auto-recovery enable
```

Verification Run the **show run** command to display the configurations. By default, the configurations are not displayed.

8.3 dual-active bfd interface

Use this command to configure a BFD port.
Use the **no** form of this command to remove the setting.
dual-active bfd interface *interface-name*
no dual-active bfd interface *interface-name*

Parameter Description

Parameter	Description
interface-name	Interface name

Defaults N/A.

Command Mode config-vs-domain mode

Usage Guide The BFD port must be a routing port on the peer end.

Configuration The following examples configures interface Gi 1/1/1 as a BFD port.

Examples

```
Ruijie(config)# interface GigabitEthernet 1/1/1
Ruijie(config-if- GigabitEthernet 1/1/1)# no switchport
Ruijie(config)# interface GigabitEthernet 2/1/1
Ruijie(config-if- GigabitEthernet 2/1/1)# no switchport
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# dual-active bfd interface GigabitEthernet 1/1/1
Ruijie(config-vs-domain)# dual-active bfd interface GigabitEthernet 2/1/1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

8.4 dual-active detection

Use this command to enable DAD.

Use the **no** form of this command to restore the default setting.

dual-active detection { **bfd | aggregateport** }

no dual-active detection { **bfd** | **aggregateport**}

Parameter Description

Parameter	Description
bfd	BFD-based DAD
aggregateport	AP-based DAD

Defaults This function is disabled by default.

Command Mode config-vs-domain mode

Usage Guide Configure this command only in virtual switch unit (VSU) mode.

Configuration Examples The following example enables BFD-based DAD.

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# dual-active detection bfd
```

The following example disables BFD-based DAD.

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# no dual-active detection bfd
```

The following example enables AP-based DAD.

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# dual-active detection aggregateport
```

The following example disables AP-based DAD.

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)#no dual-active detection aggregateport
```

Related Commands

Command	Description
dual-active pair interface	Configures a DAD interface.
dual-active exclude interface	Configures an exclude interface of DAD.
show switch virtual dual-active	Displays the configuration and status of DAD.

Platform Description N/A

8.5 dual-active exclude interface

Use this command to configure an exclude interface of DAD.

Use the **no** form of this command to remove the exclude interface setting.

dual-active exclude interface *interface-name*

no dual-active exclude interface *interface-name*

Parameter Description

Parameter	Description
interface-name	Interface name

Defaults N/A

Command Mode config-vs-domain mode

Usage Guide Configure this command only in VSU mode.

After the VSU works in dual-active chassis mode, to remotely log in to the management device from an interface, you can run the **dual-active exclude interface** command to set this interface to an interface that is not disabled in recovery mode.

An exclude interface must be a routing interface instead of a virtual switch link (VSL) interface.

Multiple exclude interfaces are supported.

Configuration Examples The following example configures interface Gi 1/1/3 as an exclude interface of DAD.

```
Ruijie(config)# interface GigabitEthernet 1/1/3
Ruijie(config-if)# no switchport
Ruijie(config-if)# ip address 3.1.1.1 255.255.255.0
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# dual-active exclude interface GigabitEthernet
1/1/3
```

Related Commands

Command	Description
dual-active detection	Configures DAD.

dual-active pair interface	Configures a DAD interface.
show switch virtual dual-active	Displays the configuration and status of DAD.

Platform Description N/A

8.6 dual-active interface

Use this command to configure an AP-based DAD interface.
Use the **no** form of this command to remove the setting.
dual-active interface *interface-name* [**vlan** *vlan-id*]
no dual-active interface *interface-name* [**vlan** *vlan-id*]

Parameter Description

Parameter	Description
interface-name	Interface type and interface number. An AP-based DAD interface must be specified.
vlan-id	VLAN ID

Defaults N/A

Command Mode config-vs-domain mode

Usage Guide Only one AP-based detection interface can be configured. Create an AP-based interface before setting it to a detection interface. The previous detection interface will be overwritten by the current detection interface. When the AP is a trunk port and the native VLAN is beyond the allowable VLAN range of the AP-based detection interface, a detection VLAN needs to be configured for the AP-based detection interface. The configured VLAN must be within the allowable VLAN range of the trunk port and has been correctly created on the device.

Configuration Examples The following example configures AP 1 as the AP-based detection interface.

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# dual-active interface aggregateport 1
```

The following example configures aggregateport 1 as a detection interface and runs the **switchport trunk allowed vlan only 1-2** command for the interface.

```
Ruijie(config)# interface aggregateport 1
Ruijie(config-if-AggregatePort 1)#switchport mode trunk
Ruijie(config-if-AggregatePort 1)#switchport trunk allowed vlan only 1-2
Ruijie(config-if-AggregatePort 1)#exit
Ruijie(config)#vlan 2
Ruijie(config-vlan)#exit
```

```
Ruijie(config)# switch virtual domain 1

Ruijie(config-vs-domain)# dual-active interface aggregateport 1 vlan 2
```

Related Commands

Command	Description
dual-active detection	Configures BFD-/AP-based DAD.
show switch virtual dual-active	Displays the configuration and status of DAD.

Platform Description N/A

8.7 port-member interface

Use this command to add a VSL-AP member interface.

Use the **no** form of this command to delete a VSL-AP member interface.

port-member interface *interfacename* [**copper | fiber**]

no port-member interface *interfacename*

Parameter Description

Parameter	Description
interfacename	Interface name, for example, GigabitEthernet 0/1 and GigabitEthernet 1/0/1.
copper	Copper port
fiber	Fiber port

Defaults N/A

Command Mode config-vsl-port mode

Usage Guide Configure this command in VSU mode or in standalone mode.

Configuration Examples The following example adds and deletes a VSL-AP member port in standalone mode.

```
Ruijie(config)# vsl-port
Ruijie(config-vsl-port)# port-member interface GigabitEthernet 0/1
Ruijie(config-vsl-port)# no port-member interface GigabitEthernet 0/2
```

The following example adds and deletes a VSL-AP member port in VSU mode.

```
Ruijie(config)# vsl-port
Ruijie(config-vsl-port)# port-member interface GigabitEthernet 1/1/1
Ruijie(config-vsl- port)# no port-member interface GigabitEthernet 1/1/1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

8.8 led-blink

Use this command to configure LED blink function.

led-blink {enable | disable} [device *device_id***]**

Parameter Description

Parameter	Description
enable	Enables this function.
disable	Disables this function.
device_id	Device ID

Defaults This function is disabled by default.

Command Mode Privileged EXEC mode

Usage Guide In single-device mode, this function can be only enabled and disabled.
In VSU mode, a device can be specified. If not specified, all devices in the VSU will be configured.
If running for 30 minutes, this function is disabled automatically even without any operation.
The configuration cannot be saved. In case of restart or active/standby switch-over, it will be removed.

Configuration Examples The following example enables and disables LED blink function.

```
Ruijie#led-blink enable
Ruijie#led-blink disable
```

The following example enables and disables LED blink function on Device 2.

```
Ruijie#led-blink enable device 2
Ruijie#led-blink disable device 2
```

The following example enables and disables LED blink function in VSU.

```
Ruijie#led-blink enable
Ruijie#led-blink disable
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

8.9 mgmt_mode unique

Use this command to configure the function of creating only one MGMT interface for the system in VSU mode. Use the **no** form of this command to disable the function of creating only one MGMT interface for the system in VSU mode and create one MGMT interface for each chassis.

mgmt_mode unique

no mgmt_mode

Parameter Description

Parameter	Description
N/A	N/A

Defaults The function of creating only one MGMT interface for the system in VSU mode is disabled by default and one MGMT interface is created for each chassis.

Command Mode Global configuration mode

Default Level 14

Usage Guide After this command is configured, run the **write** command to save the configuration. The configuration takes effect only after the device is restarted. This command is available both in VSU mode and standalone mode, but takes effect only in VSU mode.

Configuration Examples The following example configures the function of creating one MGMT interface for the system in VSU mode.

```
Ruijie(config)#mgmt_mode unique

Please write and reload system to take cfg effect!
```

The following example disables the function of creating only one MGMT interface for the system in VSU mode and creates one MGMT interface for each chassis.

```
Ruijie(config)#no mgmt_mode

Please write and reload system to take cfg effect!
```

8.10 session

Use this command to perform redirection to a host or a device console.

session { **device** *switch_id* | **master** }

Parameter Description

Parameter	Description
device	Redirects to the member device console.
switch_id	Member device number, varying with products
master	Redirects to the host console.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command takes effect in VSU mode.

Configuration Examples The following example redirects the serial port console of standby device 2 to the master device console.

```
Ruijie-STANDBY#session master
Ruijie#exit
Ruijie-STANDBY#
```

The following example redirects the master device console to the console of standby device 2 and exits.

```
Ruijie#session device 2
Ruijie-STANDBY#exit
Ruijie#
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

8.11 show switch id

Use this command to display the device ID.

show switch id

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the device ID in the standalone mode.

```
Ruijie#show switch id
Switch ID is 2
```

The following example displays the device ID in the VSU device.

```
Ruijie#show switch id
Switch ID is 1
```

Related Commands

Command	Description
show switch virtual	Displays the domain ID as well as the ID and role of each chassis.

Platform Description N/A

8.12 show switch virtual

Use this command to display the domain ID as well as the ID, status and role of the device.
show switch virtual

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the domain ID as well as the ID, status and role of the device in standalone mode.

```
Ruijie# show switch virtual
Current system is running in "STANDALONE" mode.
```

The following example displays the domain ID as well as the ID, status and role of each device in VSU mode.

```
Ruijie#show switch virtual
Switch_id    Domain_id    Priority    Status    Role        Description
----------------------------------------------------------------------
--
1(1)        1(1)        100(100)    OK        ACTIVE      switch-1
2(2)        1(1)        100(100)    OK        CANDIDATE    switch-2
3(3)        1(1)        100(100)    OK        STANDBY     switch-3
```

Related Commands

Command	Description
switch	Modifies the device ID in standalone mode.
switch priority	Configures the device priority.

switch renumber	Modifies the device ID in VSU mode.
switch domain	Modifies the domain ID of a device in VSU mode.
switch virtual domain	Modifies the domain ID of a device in standalone mode.

Platform Description N/A

8.13 show switch virtual balance

Use this command to display the load balance configuration in VSU mode.

show switch virtual balance

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the load balance configuration of the device in VSU mode.

```
Ruijie#show switch virtual balance
Aggregate port LFF: enable
```

Related Commands

Command	Description
show switch virtual	Displays the domain ID as well as the ID and role of the device.

Platform Description N/A

8.14 show switch virtual config

Use this command to display the VSU configuration of the device in standalone or VSU mode.

show switch virtual config [*switch_id*]

Parameter Description

Parameter	Description
switch_id	Displays the VSU configuration of the specified device.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the VSU configuration of the device in standalone mode.

```
Ruijie#show switch virtual config
mac: 00d0.f810.3323
!
switch virtual domain 1
!
switch 1
switch 1 priority 200
!
vsl-port
port-member interface GigabitEthernet 0/1
port-member interface GigabitEthernet 0/2
!
switch convert mode standalone
!
```

The following example displays the VSU configuration of the device in VSU mode.

```
Ruijie#show switch virtual config
switch id: 1 (mac: 00d0.f810.1111)
!
switch virtual domain 1
!
switch 1
switch 1 priority 200
switch 1 description switch1
!
vsl-port
port-member interface GigabitEthernet 0/1
port-member interface GigabitEthernet 0/2
!
Switch convert mode virtual
!

switch_id: 2 (mac: 00d0.f810.2222)
!
switch virtual domain 1
!
switch 2
switch 2 priority 100
!
```

```
vsl-port
port-member interface GigabitEthernet Ethernet 0/1
port-member interface GigabitEthernet 0/2
!
Switch convert mode virtual
!
```

Related Commands

Command	Description
show switch virtual	Displays the domain ID as well as the ID and role of each chassis.

Platform Description N/A

8.15 show switch virtual dual-active

Use this command to display the configuration of DAD.

show switch virtual dual-active { **bfd | aggregateport | summary** }

Parameter Description

Parameter	Description
bfd	Configuration of BFD-based DAD
aggregateport	Configuration of AP-based DAD
summary	Configuration and status of DAD

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the configuration and status of DAD.

```
Ruijie# show switch virtual dual-active summary
BFD dual-active detection enabled: Yes
Aggregateport dual-active detection enabled: NO
Interfaces excluded from shutdown in recovery mode:
GigabitEthernet 1/1/3
GigabitEthernet 1/1/4In dual-active recovery mode: No
```

The following example displays the configuration of BFD-based DAD.

```
Ruijie# show switch virtual dual-active bfd
BFD dual-active detection enabled: Yes
BFD dual-active interface pairs configured:
Pair interface GigabitEthernet 1/0/1 and interface GigabitEthernet 2/0/1:
UP
Pair interface GigabitEthernet 1/0/2 and interface GigabitEthernet 2/0/2:
```

```
UP
```

The following example displays the status of AP-based DAD.

```
Ruijie# show switch virtual dual-active aggregateport
Aggregateport dual-active detection enabled: Yes
Aggregateport dual-active interface configured:
AggregatePort 1:  UP
        GigabitEthernet 1/0/1: UP
        GigabitEthernet 2/0/1: UP
        GigabitEthernet 1/0/2: UP
        GigabitEthernet 2/0/2: UP
DAD relay enable AP list:
    AggregatePort 1
```

Related Commands

Command	Description
dual-active detection	Enables DAD.
dual-active pair interface	Configures a DAD interface.
dual-active exclude interface	Configures an exclude interface.

Platform Description N/A

8.16 show switch virtual link

Use this command to display the status of a virtual switch link (VSL).

show switch virtual link [**port**]

Parameter Description

Parameter	Description
port	Displays the port status of a VSL.

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays VSL link information.

```
Ruijie# show switch virtual link
VSL-AP   State   Peer-VSL   Rx         Tx         Uptime
------- ------- ---------- --------- ----------- -------------
1/1     UP      2/1        657976     694603     0d,1h,42m
2/1     UP      1/1        694856     658174     0d,1h,42m
```

The values of **VSL Status** are **DOWN** and **UP**.

The following example displays VSL port information.

```
Ruijie# show switch virtual link port

switch 1:
Port                    AP  State     Peer-port           Rx    Tx
    Uptime
------------------------------------------------------------------------
------------
GigabitEthernet 1/0/1   1   OK    GigabitEthernet 2/0/1    9000  9000
    0d,0h,20m
GigabitEthernet 1/0/2   2   OK    GigabitEthernet 2/0/2    9000  9000
    0d,0h,20m

Switch 2:
Port                    AP  State     Peer-port           Rx    Tx
    Uptime
------------------------------------------------------------------------
------------
GigabitEthernet 2/0/1   1   OK    GigabitEthernet 1/0/1    9000  9000
    0d,0h,20m
GigabitEthernet 2/0/2   2   OK    GigabitEthernet 1/0/2    9000  9000
    0d,0h,20m
```

A VSL interface can be in the UP, DOWN, or OK state.

Related Commands

Command	Description
show switch virtual	Displays information about the VSU system.
show switch virtual role	Displays the ID, role, and priority of each device.

Platform Description N/A

8.17 show switch virtual role

Use this command to display the ID, role, and priority of each chassis.

show switch virtual role

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The following example displays the domain ID as well as the ID, status and role of the device in standalone mode.

```
Ruijie# show switch virtual
Current system is running in "STANDALONE" mode.
```

The following example displays the domain ID as well as the ID, status and role of each device in VSU mode.

```
Ruijie#show switch virtual
Switch_id    Domain_id    Priority    Status    Role        Description
----------------------------------------------------------------------------
--
1(1)        1(1)         100(100)    OK        ACTIVE      switch-1
2(2)        1(1)         100(100)    OK        CANDIDATE    switch-2
3(3)        1(1)         100(100)    OK        STANDBY     switch-3
```

Related Commands

Command	Description
switch priority	Configures the priority of a device in the VSU system.
switch virtual domain	Modifies the domain ID of a device in standalone mode.
show switch virtual link	Displays VSL information.

Platform Description N/A

8.18 show switch virtual topology

Use this command to display the VSU topology connection status.

show switch virtual topology

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays the topology status.

```
Ruijie# show switch virtual topology
Introduction: '[num]' means switch num, '(num/num)' means vsl-aggregateport
num.

Ring Topology:
```

```
[1](1/2)---(2/1)[2](2/2)---(1/1)[1]

Switch[1]: ACTIVE, MAC: 00d0.f822.33d6, Description: Switch1
Switch[2]: STANDBY, MAC: 1234.5678.9003, Description: Switch2
```

Field	Description
Ring Topology	Topology type.
Switch[-]	Device description.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

8.19 show mgmt_mode

Use this command to display the MGMT interface creation mode in VSU mode.

show mgmt_mode

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays the MGMT interface creation mode.

```
Ruijie#show mgmt_mode

Current mgmt_mode : unique

Reload mgmt_mode : unique

Load cfg mgmt_mode : unique
```

Field description

Field	Description
Current mgmt_mode	Indicates the current MGMT interface creation mode. **unique**: Only one MGMT interface is created for the system. **normal**: One MGMT interface is created for each chassis.
Reload mgmt_mode	Indicates the MGMT interface creation mode used after restart.

	unique: Only one MGMT interface is created for the system. **normal**: One MGMT interface is created for each chassis.
Load cfg mgmt_mode	Indicates the MGMT interface creation mode configured in the configuration file at the startup of each management board. **unique**: Only one MGMT interface is created for the system. **normal**: One MGMT interface is created for each chassis.

8.20 switch

Use this command to specify the ID of a device in the VSU system.

Use the **no** form of this command to restore the default setting.

switch *switch_id*

no switch

Parameter Description

Parameter	Description
switch_id	ID of a device in the VSU system

Defaults The default is 1.

Command Mode config-vs-domain mode

Usage Guide The device ID identifies each virtual device member. In VSU mode, the interface name format changes to "switch/slot/port" from "slot/port", in which "switch" is the device ID.

If either chassis are active or if the role of the just started chassis is uncertain and both have the same priority, the chassis with a smaller ID is elected as the active one.

This command can be only used to modify the device ID in standalone mode. In VSU mode, run the **switch renumber** command to modify the device ID. The modified device ID takes effect only after you restart the device, regardless of in standalone mode or in VSU mode.

Configuration Examples The following example sets the ID of the device whose domain ID is 1 to **2** in the VSU system.

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# switch 2
```

Related Commands

Command	Description
switch virtual domain	Modifies the domain ID of a device in standalone mode.
switch priority	Configures the priority of a device in the VSU system.
show switch virtual	Displays the domain ID as well as the ID and role of each chassis.

Platform Description N/A

8.21 switch convert mode

Use this command to perform conversion between the standalone mode and the VSU mode.

switch convert mode { **virtual | standalone** } [*switch_id*]

Parameter Description

Parameter	Description
virtual	VSU mode
standalone	Standalone mode
switch_id	Device ID

Defaults The device is in standalone mode by default.

Command Mode Privileged EXEC mode

Usage Guide After you run the **switch convert mode virtual** command, the software automatically backs up the configuration file in standalone mode, saves it as a **standalone.text** file, and then deletes the **config.text** file. The software also prompts you whether to use the **virtual_switch.text** file to overwrite the **config.text** file, write the VSU-related configurations to the **config_vsu_dat** file, and then restart the device.

After you run the **switch convert mode standalone** command, the active chassis automatically backs up the configuration file in VSU mode, saves it as a **virtual_switch.text** file, and then deletes the **config.text** file. The active chassis also prompts you whether to use the **standalone.text** file to overwrite the **config.text** file and restart the device.

The **switch convert mode** command can be used in standalone mode or in VSU mode. In standalone mode, this command is used to switch the mode of the current chassis. In VSU mode, this command is used to switch the mode of the device specified by **switch_id** if **switch_id** is available and to switch the mode of the active device if **switch_id** is not available.

You are advised to first switch the mode of the standby device and then the mode of the active mode.

Configuration Examples The following example sets the domain ID to **1**, device ID to **1**, as well as device priority to **200**, and converts the device mode from the standalone mode into the VSU mode.

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# switch 1
Ruijie(config-vs-domain)# switch 1 priority 200
Ruijie(config-vs-domain)# end
Ruijie# switch convert mode virtual
```

The following example switches the modes of the standby device (**switch_id** set to **2**) and the active device (**switch_id** set to **1**) from the VSU mode to the standalone mode.

```
Ruijie# switch convert mode standalone 2
Ruijie# switch convert mode standalone 1
```

Related

Command	Description

Commands		
	switch	Modify the device ID in standalone mode.
	switch virtual domain	Modify the domain ID of a device in standalone mode.
	switch priority	Configure the priority of a device in the VSU system.
	show switch virtual	Display the domain ID as well as the ID and role of each chassis.

Platform Description N/A

8.22 switch crc

Use this command to configure parameters for frame error detection.

Use the **no** form of this command to restore the default setting.

switch crc errors *error_num* **times** *time_num*

no switch crc

Parameter Description

Parameter	Description
error_num	Limits the number of error frames increasing from that in the last detection. If the increased number is greater than *error_num*, it is taken as an error.
time_num	When the error count exceeds the *time_num*, the device will take actions (prompting a message or disabling the port).

Defaults The default *error_num* is 3.
The default *time_num* is 10.

Command Mode config-vs-domain mode

Usage Guide N/A

Configuration Examples The following example sets the *error_time* and *time_num* parameters to 10 and 5 respectively.

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)#
Ruijie(config-vs-domain)#switch crc errors 10 times 5
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

8.23 switch description

Use this command to configure the description for a VSU switch.

Use the **no** form of this command to remove the setting.

switch *switch_id* **description** *dev-name*

no switch *switch_id* **description**

Parameter Description

Parameter	Description
switch_id	Device ID
dev_name	Device description, no greater than 12 characters.

Defaults N/A

Command Mode config-vs-domain mode

Usage Guide This command is configured on a device in whether standalone or VSU mode and takes effect immediately after configuration,

Configuration Examples The following example configures the description for a VSU switch.

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# switch 1 description buildingA
Ruijie(config-vs-domain)# exit
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

8.24 switch domain

Use this command to modify the domain ID of a device in VSU mode.

Use the **no** form of this command to restore the default setting.

switch *switch_id* **domain** *new_domain_id*

no switch *switch_id* **domain**

Parameter Description

Parameter	Description
switch_id	ID of the running device in VSU mode.
new_domain_id	New domain ID, in the range from 1 to 255.

Defaults The default *new_domain_id* is 100 by default.

Command Mode config-vs-domain mode

Usage Guide Use this command only in VSU mode. In addition, the setting can take effect only after the device is restarted.

Configuration Examples The following example sets the domain ID of device 1 to **10** in VSU mode.

```
Ruijie(config-vs-domain)# switch 1 domian 10
Changing the domain ID may cause VSU establishment failure after the next
startup. Are you sure to continue? [N/Y]y
```

The following example sets the domain ID of device 2 to the default value in VSU mode.

```
Ruijie(config-vs-domain)# no switch 2 domain
Changing the domain ID may cause VSU establishment failure after the next
startup. Are you sure to continue? [N/Y]y
```

Related Commands

Command	Description
switch virtual domain	Modifies the domain ID in standalone mode.
show switch virtual	Displays the domain ID as well as the ID and role of each chassis.

Platform Description N/A

8.25 switch priority

Use this command to configure the priority of a device in the VSU system.
Use the **no** form of this command to restore the default setting.
switch *switch_id* **priority** *priority_num*
no switch *switch_id* **priority**

Parameter Description

Parameter	Description
switch_id	ID of a device in the VSU system.
priority_num	Priority of a device in the VSU system, ranging from 1 to 255.

Defaults The default *priority_num* is 100.

Command Mode config-vs-domain mode.

Usage Guide A larger value means a higher priority. The chassis with a higher priority is elected as the active chassis.
You can use this command in standalone mode or in VSU mode. The modified priority takes effect only after you restart the device.
This command is not used to modify the value of **switch_id**.
In VSU mode, **switch_id** indicates the ID of the running device. If the ID does not exist, the configuration does not effect.

Configuration Examples The following example sets the priority of device 1 to **200**.

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# switch 1 priority 200
Ruijie(config-vs-domain)# exit
```

The following example sets the priority of device 1 to **200** and restores the priority of device 2 to

the default value in VSU mode.

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# switch 1 priority 200
Changing the priority of the switch may cause the master switch and the slave switch different from the current ones after the next startup. Are you sure to continue? [N/Y]y
Ruijie(config-vs-domain)# no switch 2 priority
Changing the priority of the switch may cause the master switch and the slave switch different from the current ones after the next startup. Are you sure to continue? [N/Y]y
Ruijie(config-vs-domain)# exit
```

Related Commands

Command	Description
switch	Modifies the device ID in standalone mode.
show switch virtual	Displays the domain ID as well as the ID and role of each chassis.

Platform Description N/A

8.26 switch renumber

Use this command to modify the ID of any device in VSU mode.

Use the **no** form of this command to restore the default setting.

switch *switch_id* **renumber** *new_switch_id* [**force**]

no switch *switch_id*

Parameter Description

Parameter	Description
switch_id	ID of the running device in VSU mode, which can be **1** (by default) or **2**.
new_switch_id	New device ID.
force	Indicates whether the ID of a device needs to be forcibly modified. After this parameter is configured, the VSU configuration is saved immediately and the device is restarted.

Defaults N/A

Command Mode config-vs-domain mode

Usage Guide This command is configured in VSU mode. In addition and takes affect after device restart.

Configuration Examples The following example modifies the ID of device 1 that is running to **2** in VSU mode.

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# switch 1 renumber 2
```

The following example restores the ID of device 2 that is running to the default value in VSU mode.

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# no switch 2
```

The following example modifies the ID of currently running device 1 to 2 in VSU mode, and saves the configuration and restarts the device after the modification is completed.

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# switch 1 renumber 2 force
```

Related Commands

Command	Description
switch	Modifies the device ID in standalone mode.
show switch virtual	Displays the domain ID as well as the ID and role of each chassis.

Platform Description N/A

8.27 switch virtual aggregateport lff enable

Use this command to enable the locally-preferred forwarding function on the AP in VSU mode. Use the **no** form of this command to disable this function.

switch virtual aggregateport lff enable

no switch virtual aggregateport lff enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default.

Command Mode config-vs-domain mode

Usage Guide N/A

Configuration Examples The following example enables the locally-preferred forwarding function on the AP in VSU mode.

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# switch virtual aggregateport lff enable
```

Related Commands

Command	Description
show switch virtual balance	Displays the current traffic balancing mode.

Platform Description N/A

8.28 switch virtual domain

Use this command to modify the domain ID of a device in standalone mode. Use the **no** form of this command to restore the default setting.

switch virtual domain *domain_id*

no switch virtual domain

Parameter Description

Parameter	Description
domain_id	Domain ID of the VSU, in the range from 1 to 255.

Defaults The default is 100.

Command Mode Global configuration mode.

Usage Guide Only two devices with the same domain ID can form a virtual device. The domain ID must be unique within the local area network (LAN).

Configuration Examples The following example sets the domain ID of the VSU to **1**.

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)#
```

Related Commands

Command	Description
show switch virtual	Displays the domain ID as well as the ID and role of each chassis.
switch domain	Modifies the domain ID in VSU mode.

Platform Description N/A

8.29 switch virtual ecmp lff enable

Use this command to enable the locally-preferred forwarding function on the ECMP interface in VSU mode and disable cross-chassis ECMP traffic balancing. Use the **no** form of this command to restore the default setting.

switch virtual ecmp lff enable

no switch virtual ecmp lff enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is enabled by default..

Command Mode config-vs-domain mode

Usage Guide N/A.

Configuration Examples The following example enables the locally-preferred forwarding function on the ECMP interface in VSU mode.

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)#switch virtual ecmp lff enable
```

Related Commands

Command	Description
show switch virtual balance	Displays the current load balance mode.

Platform Description N/A

8.30 vsl-port

Use this command to enter VSL-PORT mode

vsl-port

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Global configuration mode

Usage Guide This command is configured on a device in whether standalone mode or VSU mode.

Configuration Examples The following example enters VSL-AP configuration mode on a device in standalone mode.

```
Ruijie(config)# vsl-port
Ruijie(config-vsl-port)#
```

The following example enters VSL-PORT configuration mode on a device in VSU mode.

```
Ruijie(config)# vsl-port
Ruijie(config-vsl-port)#
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

8.31 recovery auto-restart enable

Use this command to enable the automatic restart function in recovery mode. Use the **no** form of

this command to disable the function.

recovery auto-restart enable

no recovery auto-restart enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults The automatic restart and recovery function in recovery mode is enabled by default.

Command Mode config-vs-domain configuration mode

Usage Guide This command is configured on a device in whether standalone mode or VSU mode.

Configuration Examples The following example disables the automatic restart and recovery function in recovery mode.

```
Ruijie(config)# switch virtual domain 1

Ruijie(config-vs-domain)#

Ruijie(config-vs-domain)#no recovery auto-restart enable
```

The following example enables the automatic restart and recovery function in recovery mode.

```
Ruijie(config)# switch virtual domain 1

Ruijie(config-vs-domain)#

Ruijie(config-vs-domain)#recovery auto-restart enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9 RNS &Track Commands

9.1 delay

Use this command to specify a period of time after which the tracked object status will change if the interface status changes.

delay { **up** *seconds* [**down** *seconds*] | [**up** *seconds*] **down** *seconds* }

Parameter Description

Parameter	Description
seconds	Sets the delay time. The unit is second.

Defaults There is no delay by default.

Command Mode Track configuration mode

Usage Guide The continual oscillation of the tracked object status may cause the client of this tracked object changing also. This command can be used to delay advertising the change of the tracked object status. For example, the status of a tracked object changes from up to down, if the delay down 180 is configured, the down status will be advertised after 180 seconds. If the tracked object status changes to the up again in this period, it won't be advertised. For the client of the tracked object, the status of the tracked object is always up.

Configuration Examples The following example sets the delay time to 30 seconds when the tracked object changes to up from down.

```
Ruijie(config)# track 5 rns 10
Ruijie(config-track)# delay up 30
Ruijie(config-track)# end
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.2 dns

Use this command to set an IP RNS object to send the DNS packets and to enter the IP RNS DNS mode.

dns { **oob** *destination-hostname* **name-server** *a.b.c.d* }

Parameter Description

Parameter	Description
oob	Enables management port detection.
destination-hostname	Sets the destination IP address or the destination host domain name.
a.b.c.d	Sets the IP address for the DNS server.

Defaults N/A

Command Mode IP RNS configuration mode

Usage Guide Use this command to set an IP RNS object to send the DNS packets and to enter the IP RNS DNS mode. If you want to change the probe type, you should delete the probe first by using the **no ip rns** command and then perform new configuration.

Configuration Examples

```
Ruijie(config-ip-rns)# dns www.ruijie.com.cn name-server 61.154.22.41
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.3 frequency

Use this command to set the interval of sending the packets, which must be no smaller than the timeout time. Use the **no** form of this command to restore the default setting.
frequency *milliseconds*
no frequency

Parameter Description

Parameter	Description
milliseconds	Sets the interval of sending the packets, in the range from10 to 604800000 in the unit of milliseconds.

Defaults The default is 60 seconds.

Command Mode IP RNS ICMP echo configuration mode
IP RNS DNS configuration mode
IP RNS UDP echo configuration mode

Usage Guide Use this command to set the interval of sending the ICMP echo or DNS packets, which must be more than or equal to the timeout time configured. It is recommended not to set this value too small, which may put great pressure to the CPU.

Configuration Examples The following example configures an ICMP echo probe whose destination address is 192.168.21.1. The frequency, timeout time and threshold are set to 30000, 8000 and 6000 milliseconds respectively.

```
Ruijie(config)# ip rns 1
Ruijie(config-ip-rns)#icmp-echo 192.168.21.1
Ruijie(config-ip-rns-icmp-echo)#frequency 30000
Ruijie(config-ip-rns-icmp-echo)#timeout 8000
Ruijie(config-ip-rns-icmp-echo)#threshold 6000
```

Related Commands

Command	Description
timeout	Defines the timeout time of sending the packets.

Platform Description N/A

9.4 icmp-echo

Use this command to configure an ICMP echo RNS probe.

icmp-echo { **oob** { *destination-ip-address* | *destination-hostname* [**name-server** *ip-address*] } [**source-ipaddr** *ip-address*] **via** *type num* **next-hop** *ip-address* } | { { *destination-ip-address* | *destination-hostname* [**name-server** *ip-address*] } [**source-ipaddr** *ip-address*] [**out-interface** *type num* [**next-hop** *A.B.C.D*]] }

Parameter Description

Parameter	Description
oob	Enables management port detection.
destination-hostname	Sets the destination IP address for the ICMP echo packets.
destination-hostname	Sets the destination host name within 127 characters. The exceeding characters are truncated automatically.
name-server *ip-address*	Sets the domain name server. The default domain name server is configured via the **ip name-server** command.
source-ipaddr *ip-address*	Sets the source IP address for the ICMP echo packets.
source-interface	Sets the source interface for the ICMP echo packets.
out-interface *type num*	Sets the outgoing port for the probe packet.
via *type num*	Specifies the management port as the egress interface (non-management port) for probe packets.

next-hop *A.B.C.D*	Sets the next hop IP address.

Defaults N/A

Command Mode IP RNS configuration mode

Usage Guide This command is used to enable the IP RNS object to send ICMP echo packets containing the specified destination IP address. The default payload size of an ICMP echo packet is 36 bytes. The **request-data-size** command is used to modify the packet size.
You can modify the probe parameter after specifying the type of the IP RNS probe (such as ICMP echo probe). If you want to change the probe type, you should delete the probe first by using the **no ip rns** command and then perform new configuration.

Configuration Examples The following example enables the IP RNS object to send the ICMP echo packets containing the destination IP address 10.1.1.1.

```
Ruijie(config)# ip rns 1
Ruijie(config-ip-rns)# icmp-echo 10.1.1.1
Ruijie(config-ip-rns-icmp-echo)# exit
Ruijie(config)# ip rns schedule 1 start-time now life forever
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.5 ip rns

Use this command to define an IP RNS operation object and to enter the ip-rns configuration mode.
Use the **no** form of this command to delete an IP RNS operation object.
ip rns *operation-number*
no ip rns *operation-number*

Parameter Description

Parameter	Description
operation-number	Sets the IP RNS operation object number, in the range from 1 to 500.

Defaults N/A

Command Mode Global configuration mode

Usage Guide Use this command to define an IP RNS operation object and to enter the IP DNS configuration mode.

Configuration Examples The following example defines the IP RNS object 1.

```
Ruijie(config)# ip rns 1
```

Related Commands

Command	Description
show ip rns statistics	Displays the statistical data on the IP RNS object.

Platform Description N/A

9.6 ip rns reaction-configuration

Use this command to configure proactive threshold monitoring and trigger for the RNS probe. Use the no form of this command to restore the default setting.

ip rns reaction-configuration operation-number react monitored-element [action-type option] [threshold-type { average [number-of-measurements] | consecutive [occurrences] | immediate | never | xofy [x-value y-value] }] [threshold-value upper-threshold lower-threshold]

no ip rns reaction-configuration operation-number [react monitored-element]

Parameter Description

Parameter	Description
operation-number	Operation index, in the range from 1 to 500.
monitored-element	Monitored element. The available parameters are listed as follows: ● **allfail**: Failed to monitor all elements. The default action-type is **track**. This parameter is applied on the track module for communication. ● **rtt**: Packet round trip time (RTT) exceeds the threshold range. ● **•timeout**: Timeout in whatever direction.
action-type option	The available parameters include: ● **none**: No action, which is the default setting ● **trigge**r: Only supports the **trigger** action. ● **track**: Only supports the **track** action. Only when *monitored-element* is **allfail** is this parameter supported, which is available exclusively.
average [number-of-measurements]	Triggers operation when the average value of number-of-measurements consecutive times exceeds the threshold range. For example. number-of-measurements is set to three. Upper and lower thresholds are 5000 and 4000 respectively. The average

	value for three consecutive measurement 6000. 6000. 5000 is (6000+6000+5000)/3=5667, exceeding the upper threshold 5000. The valid range is from 1 to 16 and the default is 5,
consecutive [occurrences]	Triggers operation when the value of monitored element exceeds the threshold range for *occurrences* consecutive times. The valid range is from 1 to 16. The default is 5.
immediate	Triggers operation immediately when the value of monitored element exceeds the threshold range.
never	Never triggers operation.
xofy [x-value y-value]	X probes among the latest Y ones exceed the threshold range. The valid X range is from 1 to 16 and the default is 5. The valid Y range is from 1 to 16 and the default is 5.
threshold-value upper-threshold lower-threshold	Configures upper and lower thresholds. When *monitored-element* is **rtt**, this parameter indicates time, in the range from 0 to 60000 milliseconds. See **Usage Guide** for the default setting. When react type is timeout, you don't need to configure this parameter.

Defaults N/A

Command Mode Global configuration mode

Usage Guide One RNS object can be configured with multiple threshold monitoring, each for one element.

Monitored elements that are supported vary with different probe types.

monitored-element	icmp-echo	dns	udp-echo
timeout	✓	✓	✓
rtt	✓	✓	✓

The default thresholds for monitored elements are listed as follows:

Monitored Element	Upper Threshold	Lower Threshold
timeout	-	-
rtt	5000 ms	0 ms

Configuration Examples The following example configures RNS1 and its threshold monitoring.

```
Ruijie(config)# ip rns 1
Ruijie(config-ip-rns)# icmp-echo 192.168.23.1
Ruijie(config-ip-rns-icmp-echo)# exit
Ruijie(config)# ip rns schedule 1 start-time now life forever
Ruijie(config)#ip rns reaction-configuration 1 react timeout threshold-type
immediate action-type triggerOnly
```

Related Commands

Command	Description

N/A	N/A

Platform Description N/A

9.7 ip rns reaction-trigger

Use this command to enable the RNS probe which exceeds the monitoring threshold to trigger another RNS probe which is in the pending state. Use the **no** form of this command to restore the default setting.

ip rns reaction-trigger *operation-number target-operation*

no ip rns reaction-trigger *operation-number target-operation*

Parameter Description

Parameter	Description
operation-number	The source operation number, in the range from 1 to 500
target-operation	The target operation number, in the range from 1 to 500

Defaults N/A

Command Mode Global configuration mode

Usage Guide The trigger function is applied in network fault diagnosis scenario

Configuration Examples The following example enables IP RNS1 to trigger IP RNS 2.

```
Ruijie(config)# ip rns 1
Ruijie(config-ip-rns)# icmp-echo www.baidu.com
Ruijie(config-ip-rns-icmp-echo)# exit
Ruijie(config)#ip rns schedule 1 start-time now life forever
Ruijie(config)#ip rns reaction-configuration 1 react timeout threshold-type
immediate action-type trigger
Ruijie(config)# ip rns 2
Ruijie(config-ip-rns)# dns www.baidu.com name-server 8.8.8.8
Ruijie(config-ip-rns-dns)# exit
Ruijie(config)#ip rns reaction-trigger 1 2
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.8 ip rns reset

Use this command to clear all RNS configuration.

ip rns reset

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Global configuration mode

Usage Guide This command is used to clear all RNS configuration. This command is used only in extreme cases (for example, RNS probe configuration is wrong).

Configuration Examples The following example clears all IP RNS configuration.

```
Ruijie(config)# ip rns reset
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.9 ip rns restart

Use this command to restart the RNS probe.

ip rns restart *operation-number*

Parameter Description

Parameter	Description
operation-number	Sets the RNS operation object number, in the range from 1 to 500.

Defaults N/A

Command Mode Global configuration mode

Usage Guide This command is used to restart the RNS probe whose schedule is in the pending state. This command is invalid for the RNS probe not configured with the scheduling policy.

Configuration Examples The following example restarts IP RNS 1.

```
Ruijie(config)# ip rns restart 1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.10 ip rns schedule

Use this command to configure the scheduling strategy for the RNS probe. Use the **no** form of this command to restore the default setting.

ip rns schedule operation-number [**life** { **forever** | seconds }] [**start-time** { hh:mm [:ss] [month day | day month] | **pending | now | after** hh:mm:ss }] [**recurring**]

no ip rns schedule operation-number

Parameter Description

Parameter	Description
operation-number	RNS operation index, in the range from 1 to 500
life forever	The RNS operation is valid forever.
life seconds	The RNS survival time, measured in seconds
hh:mm [:ss]	Defines the time when the operation starts,
month	The month when the operation starts, in the range from January (Jan.) to December (Dec.). The default is the current month.
day	The day when the operation starts, in the range from 1 to 31. The default is the current day.
pending	The start time is pending.
now	The operation starts right now.
after hh:mm:ss	The operation starts after hh hours, mm minutes and ss seconds.
recurring	The operation starts automatically as scheduled every day.

Defaults The RNS probe is in the pending state by default. In other words, the probe is not performed unless it is triggered by another RNS probe.

Command Mode Global configuration mode

Usage Guide The **ip rns schedule** command is used to configure the IP RNS probe with scheduling policy. Once the scheduling policy is configured, the RNS probe cannot be modified. You can modify the RNS probe after deleting the schedule with the **no ip rns schedule** command,

Life {seconds} refers to the survival time of the IP RNS probe. The probe will end after the survival time.

Configuration Examples The following example configures the RNS probe with scheduling policy.

```
Ruijie(config)# ip rns 1
Ruijie(config-ip-rns)# icmp-echo 10.1.1.1
Ruijie(config-ip-rns-icmp-echo)# exit
Ruijie(config)#ip rns schedule 1 start-time now life forever
```

Once the scheduling policy is configured, the RNS probe cannot be modified. The RNS probe can be modified after the schedule is deleted.

```
Ruijie(config)# ip rns 1
Entry already running and cannot be modified
       (only can delete (no) and start over)
       (check to see if the probe has finished exiting)
Ruijie(config)# no ip rns schedule 1
Ruijie(config)# ip rns 1
Ruijie(config-ip-rns-icmp-echo)# exit
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.11 object

Use this command to add a tracked object to the object track list. Use the **no** form of this command to restore the default setting.

object *object-number* [**not**]

no object *object-number*

Parameter Description

Parameter	Description
object-number	Tracked object number, in the range from 1 to 700

Defaults No tracked object is configured by default.

Command Mode Track configuration mode

Usage Guide This command is used to add a tracked object to the object track list. The number of tracked objects is only restricted by the track list capacity.

object *object-number*: The tracked object must be in the up state for the track list to be in the up state.

object *object-number* not: track: The tracked object must be in the up state for the track list to be in the up state,

- This command is configured only in track configuration mode for the track list.
- The object cannot track itself.
- The objects cannot track each other. For example, if A tracks B, B cannot track A. Otherwise, both A and B are in oscillation.

Configuration Examples The following example adds tracked object 4 to the object track list. When object 1 is in the up state, 2 down, 3 up, object 4 is in the up state.

```
Ruijie(config)# track 4 list boolean and
Ruijie(config-track)# object 1
Ruijie(config-track)# object 2 not
Ruijie(config-track)# object 3
Ruijie(config-track)# end
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.12 request-data-size

Use the following example to set the protocol payload size of RNS probe packet. Use the **no** form of this command to restore the default setting.

request-data-size *bytes*

no request-data-size

Parameter Description

Parameter	Description
bytes	The number of payload bytes. The minimum/maximum number of bytes varies with the probe type.

Defaults The default is the minimum payload byte, which varies with the probe type.

Command Mode IP RNS ICMP echo configuration mode
IP RNS UDP echo configuration mode

Usage Guide This command is used to fill bytes in the probe packet to probe for the bigger packet.

Probe Type	Range	Default
icmp-echo	[36, 1472]	36
Udp-echo	[36, 1472]	36

Configuration Examples The following example sets the protocol payload size of the IP RNS probe packet to 50.

```
Ruijie(config)# ip rns 1
Ruijie(config-ip-rns)# icmp-echo 10.1.1.1
Ruijie(config-ip-rns-icmp-echo)# request-data-size 50
Ruijie(config-ip-rns-icmp-echo)# exit
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.13 show ip rns configuration

Use this command to display the RNS instance configuration.

show ip rns configuration [*operation-number*]

Parameter Description

Parameter	Description
operation-number	Sets the RNS instance number, in the range from 1 to 500.

Command Mode Privileged EXEC mode

Usage Guide This command is used to display the RNS instance configuration. The configuration varies with different packet types.

Configuration Examples The following example displays the RNS 1 configuration.

```
Ruijie# show ip rns configuration 1
Entry number: 1
Tag: ruijie555
Type of operation to perform: icmp-echo
Operation timeout (milliseconds): 5000
Operation frequency (milliseconds): 10000
Threshold (milliseconds): 5000
Recurring (Starting Everyday): FALSE
Life (seconds): 3500
Next Scheduled Start Time:Start Time already passed
Target address/Source address: 2.2.2.3/0.0.0.0
Request size (ARR data portion): 36
```

Field	Description
Entry number	IP RNS operation index

Tag	Instance tag.
Type of operation to perform	Operation type.
Operation timeout (milliseconds)	Operation timeout.
Operation frequency (milliseconds)	Operation frequency.
Threshold (milliseconds)	Threshold.
Recurring (Starting Everyday)	The operation starts every day.
Life (seconds)	Life time
Next Scheduled Start Time	Next scheduled start time.
Target address/Source address	Target address/Source address
Request size (ARR data portion)	Request packet size.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.14 show ip rns collection-statistics

Use this command to display statistics about the RNS probe.

show ip rns collection-statisti**cs** [*operation-number*]

Parameter Description

Parameter	Description
operation-number	Sets the IP RNS operation object number, in the range from 1 to 500. The default is all IP RNS operation objects.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to display statistics about an IP RNS probe.

Configuration Examples The following example displays statistics about the all RNS probes.

```
Ruijie#show ip rns collection-statistics 1
Entry number: 1
Start Time Index: *2014-03-20 19:53:51
Number of successful operations: 919
Number of operations over threshold: 0
Number of failed operations due to a Disconnect: 0
Number of failed operations due to a Timeout: 2
Number of failed operations due to a Busy: 0
```

```
Number of failed operations due to a No Connection: 0
Number of failed operations due to an Internal Error: 2
Number of failed operations due to a Sequence Error: 0
Number of failed operations due to a Verify Error: 0
RTT Values:
RTTAvg: 18      RTTMin: 16      RTTMax: 37
NumOfRTT: 919     RTTSum: 16654      RTTSum2: 302786
```

Field	Description
Entry number	RNS operation index
Start Time Index:	Schedule start time
Number of successful operations:	Number of successful operation.
Number of operations over threshold:	Number of threshold violation
Number of failed operations due to a Disconnect:	Number of operation failure due to disconnection
Number of failed operations due to a Timeout:	Number of operation failure due to timeout
Number of failed operations due to a Busy:	Number of operation failure since the peer end is busy
Number of failed operations due to a No Connection:	Number of operation failure due to no connection
Number of failed operations due to an Internal Error:	Number of operation failure due to internal error
Number of failed operations due to a Sequence Error:	Number of operation failure due to sequence error
Number of failed operations due to a Verify Error:	Number of operation failure due to verification error
RTT Values	RTT value
RTTAvg:	Average RTT value
RTTMin:	Minimum RTT value
RTTMax:	Maximum RTT value
NumOfRTT:	Number of counting RTT value
RTTSum:	Sum of RTT value
RTTSum2:	Sum of squares of RTT value

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.15 show ip rns operational-state

Use this command to display operational state.

show ip rns operational-state [*operation-number*]

Parameter Description

Parameter	Description
operation-number	Sets the RNS operation object number, in the range from 1 to 500. The default is all RNS operation objects.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to display the state information about an RNS probe.

Configuration Examples The following example displays the state information about all RNS probes.

```
Ruijie# show ip rns operational-state
Entry number: 1
Modification time: *2014-01-10 10:26:14
Current seconds left in Life: Forever
Operational state of entry: Active
Number of Octets Used by this Entry: 2272
Number of operations attempted: 232
Number of operations skipped: 0
Connection loss occurred: FALSE
Timeout occurred: FALSE
Over thresholds occurred: FALSE
Latest RTT (milliseconds): 4
Latest operation start time: 2014-01-10 10:26:55
Latest operation return code: OK
```

Field	Description
Entry number	RNS operation index
Modification time	Probe result recounting time (every time schedule is enabled, the result is counted again).
Number of Octets Used by this Entry	Number of octets contained in the probe packet.
Number of operations attempted	Number of attempted operation.
Number of operations skipped	Number of failed operation.
Current seconds left in Life	Probes for the left life.
Operational state of entry	Probes for the operational state (Active/Disactive).
Connection loss occurred	Connection loss occurred.
Timeout occurred	Send request timeout occurred,
Over thresholds occurred	Threshold violation occurred.
Latest RTT (milliseconds)	Latest RTT.

Latest operation start time	Latest operation start time.
Latest operation return code	Latest operation return code.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.16 show ip rns reaction-configuration

Use this command to display the proactive threshold monitoring information of an RNS probe.

show ip rns reaction-trigger [*operation-number*]

Parameter Description

Parameter	Description
operation-number	The number of RNS operation objects, in the range from 1 to 500. The default is all RNS operation objects.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to display the proactive threshold monitoring information of an RNS probe.

Configuration Examples The following example displays the proactive threshold monitoring information of all RNS probes.

```
Ruijie#show ip rns reaction-configuration
Entry number: 1
Reaction: rtt
Threshold Type: Never
Rising (milliseconds): 5000
Falling (milliseconds): 3000
Threshold Count: 5
Threshold Count2: 5
Action Type: trigger
Reaction: timeout
Threshold Type: Never
Threshold Count: 5
Threshold Count2: 5
Action Type: trigger
```

Field	Description
Entry number	IP RNS operation index

Reaction	Monitored object
Threshold Type	The available parameters are listed as follows: **never**: Never triggers operation. **consecutive**: Triggers operation when the value of monitored element exceeds the threshold range for *occurrences* consecutive times. **average**: Triggers operation when the average value of *number-of-measurements* consecutive times exceeds the threshold range. **immediate**: Triggers operation immediately when the value of monitored element exceeds the threshold range. **xofy**: X probes among the latest Y ones exceed the threshold range.
Rising (milliseconds)	Upper threshold
Falling (milliseconds)	Lower threshold
Threshold Count	The parameter refers to the x value when the threshold-type is **xofy** or the average count when the threshold-type is **average**.
Threshold Count2	The parameter refers to the y value when the threshold-type is **xofy** or the consecutive count when the threshold-type is **consecutive**.
Action Type	Action type

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.17 show ip rns reaction-trigger

Use this command to display the reaction trigger information for all RNS objects.

show ip rns reaction-trigger [*operation-number*]

Parameter Description

Parameter	Description
operation-number	The number of IP RNS operation object, in the range from 1 to 500. The default is all RNS operation objects.

Defaults N/A

Command Privileged EXEC mode

Mode

Usage Guide This command is used to display the reaction trigger information for all RNS objects.

Configuration Examples The following example displays the reaction trigger information for all RNS objects.

```
Ruijie#show ip rns reaction-trigger
Entry number: 1
Target rns index: 2
Status of Entry (SNMP RowStatus): active
Operational State: pending
```

Field	Description
Entry number	RNS index
Target rns index	Target RNS index
Status of Entry (SNMP RowStatus)	Status of RNS entry
Operational State	Reaction-trigger state

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.18 show ip rns statistics

Use this command to display the RNS object statistics.

show ip rns statistics [*operation-number*]

Parameter Description

Parameter	Description
operation-number	Sets the IP RNS operation object number, in the range from 1 to 500

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide The statistics vary with different packet types.

Configuration Examples The following example displays the RNS object statistics.

```
Ruijie#show ip rns statistics 1
Round trip time(RTT) Index 1
Operation time to live: Forever
```

```
Latest RTT: 1 ms
Latest operation start time: 2014-01-20 10:21:38
Latest operation return code: OK
Number of successes: 386
Number of failures: 12
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.19 show track

Use this command to display statistics of the tracked object.

show track [*track-number*]

Parameter Description

Parameter	Description
track-number	Sets the tracked object number, in the range from 1 to 700.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Examples The following example displays statistics of all tracked objects.

```
Ruijie#show track
Track 1
  Reliable Network Service 5
  The state is Up
    1 change, current state last: 120 secs
  Delay up 30 secs, down 50 secs
Track 3
  Interface FastEthernet 1/0
  The state is Down, delayed Up (5 secs remaining)
    3 change, current state last: 300 secs
  Delay up 60 secs, down 60 secs
Track 4
  List boolean and
```

```
Object 1
Object 2 not
The state is Up
1 change, current state last: 100 secs
Delay up 0 secs, down 0 secs
```

Field	Description
Track x	Tracked object ID
Reliable Network Service x	Tracked RNS object
The state is x	Tracked object state
x change	Tracked object change count
current state last: x secs	The time for which the current state lasts
Delay up x secs, down x secs	The delay state of the tracked object
Interface x x	Tracked interface
The state is x, delayed y (c secs remaining)	The tracked object state is x, and will turn to y in c seconds.
List boolean and	The Boolean expression enables calculation by using “and” operator.
Object x	Object x is in the up state.
Object x not	Object x is in the down state.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.20 show track client

Use this command to display the track client statistics.

show track client

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide This command is used to display the statistics of the client connecting to track.

Configuration Examples The following example displays the statistics of the client connecting to track.

```
Ruijie# show track client
Track client 2: socket 4
client_path: /tmp/vsd/0/track/.client_nsm
Connection time: Fri Dec 28 17:04:43 2012
```

Field	Description
Track client x: socket x	Track client number and socket
client_path: /tmp/vsd/0/track/.client_nsm	The path from the client to track
Connection time: xx xx xx xx:xx:xx xx	The time when the client connects to track

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.21 tag

Use this command to set the tag for IP RNS probe. Use the **no** form of this command to restore the default setting.

tag *text*

no tag

Parameter Description

Parameter	Description
text	Sets the tag for IP RNS probe, which is composed of up to 79 printable characters.

Defaults N/A

Command Mode IP RNS DNS configuration mode
IP RNS ICMP echo configuration mode
IP RNS UDP echo configuration mode

Usage Guide Tag is used to identify the probe. When the tag exceeds 79 characters, the surplus characters are truncated.

Configuration Examples The following example sets the tag for IP RNS probe to telecom gateway.

```
Ruijie(config)# ip rns 1
Ruijie(config-ip-rns)# icmp-echo 10.1.1.1
Ruijie(config-ip-rns-icmp-echo)# tag telecom_gateway
Ruijie(config-ip-rns-icmp-echo)# exit
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.22 threshold

Use this command to configure the upper threshold value for RNS probe. Use the **no** form of this command to restore the default setting.

threshold *milliseconds*

no threshold

Parameter Description

Parameter	Description
milliseconds	Sets the upper threshold value, in the range from 0 to 60000 in the unit of milliseconds.

Defaults The default is 5000 milliseconds.

Command Mode
IP RNS DNS configuration mode
IP RNS ICMP echo configuration mode
IP RNS P echo configuration mode

Usage Guide The threshold value must be no greater than the timeout value. See **Usage Guide** of the **frequency** command for the relationship among timeout, frequency and threshold.

Configuration Examples The following example sets the upper threshold value for RNS probe to 8000 milliseconds.

```
Ruijie(config)# ip rns 1
Ruijie(config-ip-rns)# icmp-echo 10.1.1.1
Ruijie(config-ip-rns-icmp-echo)# threshold 8000
Ruijie(config-ip-rns-icmp-echo)# exit
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.23 timeout

Use this command to set the timeout time of an RNS probe.
Use the **no** form of this command to restore the default setting.
timeout *milliseconds*
no timeout

Parameter Description

Parameter	Description
milliseconds	Sets the timeout time, in the range from 10 to 604800000 in the unit of milliseconds. The default is 5000 milliseconds.

Defaults The default timeout of an IP RNS probe varies with the detection type, which can be displayed by using **show ip rns configuration** command.

Command Mode
IP RNS ICMP echo configuration mode
IP RNS DNS configuration mode
IP RNS configuration mode

Usage Guide The timeout value must be no smaller than the threshold value. See **Usage Guide** of the **frequency** command for the relationship among timeout, frequency and threshold.

Configuration Examples The following example sets the timeout time of an IP RNS probe to 10000 milliseconds.

```
Ruijie(config)# ip rns 1
Ruijie(config-ip-rns)# icmp-echo 10.1.1.1
Ruijie(config-ip-rns-icmp-echo)# timeout 10000
Ruijie(config-ip-rns-icmp-echo)# exit
```

Related Commands

Command	Description
frequency *milliseconds*	Sets the interval of sending the packets.

Platform Description N/A

9.24 tos

Use this command to set the Type of Service (ToS) field in the IPv4 header of an RNS probe packet.
Use the **no** form of this command to restore the default setting.
tos *number*
no tos

Parameter

Parameter	Description

Description

number	Sets the ToS field in the IPv4 header of an IP RNS probe packet, in the range from 0 to 255.

Defaults The default is 0.

Command Mode IP RNS DNS configuration mode
IP RNS ICMP echo configuration mode

Usage Guide ToS is an 8-bit field of an IPv4 packet. ToS can be used to set probe packet priority. Different ToS corresponds to different priority.

Configuration Examples The following example sets the ToS field in the IPv4 header of an RNS probe packet to 128.

```
Ruijie(config)# ip rns 1
Ruijie(config-ip-rns)# icmp-echo 10.1.1.1
Ruijie(config-ip-rns-icmp-echo)# tos 128
Ruijie(config-ip-rns-icmp-echo)# exit
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.25 track interface line-protocol

Use this command to configure a tracked object to track the interface status and enter the track mode. The **no** form of this command is used to delete a tracked object.
track *object-number* **interface** *type number* **line-protocol**
no track *object-number*

Parameter Description

Parameter	Description
object-number	Sets the tracked object number, in the range of 1-700.
type number	Sets the interface type and the interface number.

Defaults N/A

Command Mode Global configuration mode

Usage Guide This command is used to configure a tracked object to track the link state of the interface. If the link state of the interface is up, the state of the corresponding tracked object is up too.

Configuration Examples The following example configures the object “track 3” to track the link state of ethernet 0/1.

```
Ruijie(config)# track 3 interface ethernet 0/1 line-protocol
```

Related Commands

Command	Description
track rns	Configures a tracked object to track the operating status of an rns object.
show track	Displays the tracked object related information.

Platform Description N/A

9.26 track list

Use this command to configure a tracked list object and specify the state of the tracked list based on a Boolean calculation. Use the **no** form of this command to restore the default setting.

track *object-number* **list boolean** { **and** | **or** }

no track *object-number*

Parameter Description

Parameter	Description
object-number	Sets the number of the tracked object, in the range from 1 to 700.

Defaults N/A

Command Mode Global configuration mode

Usage Guide This command is used to configure a tracked list object and specify the state of the tracked list based on a Boolean calculation

- **track** *object-number* **list boolean and**: Configure a tracked list with a Boolean expression using “AND” operator.
- **track** *object-number* **list boolean or**: Configure a tracked list with a Boolean expression using “OR” operator.

Configuration Examples The following example configures tracked list object “4” and specifies the state of the tracked list based on a Boolean calculation using operator “AND”.

```
Ruijie(config)# track 4 list boolean and
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

9.27 track rns

Use this command to configure a tracked object to track the operating status of an RNS object and enter the track mode. The **no** form of this command is used to delete a tracked object.

track *object-number* **rns** *entry-number*

no track *object-number*

Parameter Description

Parameter	Description
object-number	Sets the tracked object number, in the range from 1 to 700.
entry-number	Sets the RNS object number, in the range from 1 to 500.

Defaults N/A

Command Mode Global configuration mode

Usage Guide The RNS object status is determined by whether the response packets are received. If so, the RNS object status is up and the status of the corresponding tracked object that tracks this RNS is also up.

Configuration Examples The following example configures the object “track 5” to track the RNS instance “rns 7”.

```
Ruijie(config)# track 123 rns 1
```

Related Commands

Command	Description
track interface line-protocol	Tracks the status of one interface and enter the track mode.
show track [*track-number*]	Displays the tracked object related information.

Platform Description N/A

9.28 vrf

Use this command to set the VRF where the RNS probe resides.

Use the **no** form of this command to restore the default setting.

vrf *vrf-name*

no vrf

Parameter Description

Parameter	Description
vrf-name	Sets the VRF name.

Defaults N/A

Command Mode IP RNS ICMP echo configuration mode
IP RNS DNS configuration mode

Usage Guide N/A

Configuration Examples The following example sets the VRF where the RNS probe resides to VPN1.

```
Ruijie(config)# ip rns 1
Ruijie(config-ip-rns)# icmp-echo 192.168.23.1
Ruijie(config-ip-rns-icmp-echo)# vrf VPN1
Ruijie(config-ip-rns-icmp-echo)# exit
Ruijie(config)# ip rns schedule 1 start-time now life forever
```

Related Commands

Command	Description
frequency *milliseconds*	Sets the interval of sending the packets.

Platform Description N/A

10 PCAP Commands

10.1 packet capture file

Use this command to specify the name of the file to be saved.
packet capture file *filename* **[buffer-size** *buf-size***] [packet-num** *pkt-num***] [timeout** *timeout***]**

Use this command to clear configurations for file saving and restore the configurations for outputting logs.
clear packet capture file

Parameter Description

Parameter	Description
filename	Name of the file to be saved
buf-size	Buffer size. The buffer size is 2 MB by default if this field is not specified. Packet capture automatically stops when the buffer is full.
pkt-num	Number of captured packets. Packet capture automatically stops when the number of captured packets reaches the specified value. The packet capture will continue by default unless otherwise specified.
timeout	Indicates packet capture timeout. Packet capture automatically stops when the time of captured packets reaches the specified number. The default packet capture time is 10 minutes unless otherwise specified. The longest continually packet capture time is 120 minutes.

Command Mode Privileged EXEC mode

Usage Guide N/A

Configuration Example The following example sets the name of the file to be saved to **capture.pcap**, and sets the number of captured packets to 100.

```
Ruijie# packet capture file flash:capture.pcap packet-num 100
```

Verification Run the **show packet capture status** command to check whether the configuration succeeds.

10.2 packet capture point

Use this command to create capture points.
packet capture point *capture-point-name* **rule** *rule-name* **location {interface** *interface-name* |

control-plane} {in | out | both}

Use this command to clear capture points.

clear packet capture point *capture-point-name*

Parameter Description

Parameter	Description
capture-point-name	Name of a capture point
rule-name	Name of matching rule, which is defined by using the **packet capture rule** command
interface-name	Name of the interface for capturing packets
control-plane	Packet capture on the control plane
in | out | both	Packet capture direction: inbound, outbound, or bidirectional.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Users can define multiple capture points (a maximum of 8 capture points are supported currently) at the same location as required, to match different capture rules or packet directions. The capture points can work simultaneously without affecting each other.
Please do not create a capture point on the forwarding plane.

Configuration Example The following example creates a capture point for capturing CPU packets on the Gi0/1 interface.

```
Ruijie# packet capture point cap-1 rule tcp location interface gi0/1 both
```

Verification Run the **show packet capture status** command to check whether the configuration succeeds.

10.3 packet capture rule

10.3.1 Control Plane

Use this command to define a capture matching rule.

packet capture rule *rule-name* **filter [src-mac** *smac***] [dst-mac** *dmac***] [etype** *type* | **ip** | **arp] [ipv4_sip** *sip sip-mask***] [ipv4_dip** *dip dip-mask***] [ipv6_sip** *sipv6 sipv6-prefix***] [ipv6_dip** *dipv6 dipv6-prefix***]**
[v6_protocol *protocol* | **tcp** | **udp] [ipv6_sport** *sport* **] [ipv6_dport** *dport***] [v4_protocol***protoc*| **tcp** | **udp] [ipv4_sport** *sport* **] [ipv4_dport** *dport***]**

Use this command to clear a capture matching rule.

clear packet capture rule *rule-name*

Parameter Description

Parameter	Description
rule-name	Name of a matching rule

smac	Source MAC address
dmac	Destination MAC address
type | **ip** | **arp**	Layer-2 protocol type
sip	Source IP address
sip-mask	Source IP mask
dip	Destination IP address
dip-mask	Destination IP mask
sipv6	Source IPv6 address
sipv6-prefix	Source IPv6 prefix
dipv6	Destination IPv6 address
dipv6-prefix	Destination IPv6 prefix
protocol **| tcp | udp**	Layer-3 protocol type
sport	TCP/UDP source port
dport	TCP/UDP destination port

Command Mode Privileged EXEC mode

Usage Guide
1. Users can define multiple rules for packet capture and differentiate them by different names. After a rule is defined, the rule needs to be referenced by the capture point to actually take effect.
2. Before deleting the capture rule, all capture points referencing the rule need to be deleted.

Configuration Example The following example defines a TCP capture matching rule.

```
Ruijie# packet capture rule tcp etype ip protocol tcp
```

Verification Run the **show packet capture status** command to check whether the configuration succeeds.

10.3.2 Forwarding Plane

Use this command to define a capture matching rule.
packet capture rule *rule-name* **filter acl** *aclid* | *aclname* [**interface** *interface-name*]

Use this command to clear a capture matching rule.
clear packet capture rule *rule-name*

Parameter Description

Parameter	Description
rule-name	Name of a matching rule.
aclid | *aclname*	ACL ID or name.
interface-name	Name of an interface.

Command Mode Privileged EXEC mode

Usage Guide Users can define multiple rules for packet capture and differentiate them by different names.

Configuration Example The following example defines a capture matching rule.

```
Ruijie#packet capture rule rule1 filter acl 100 interface tenGigabitEthernet 0/1
```

Verification Run the **show packet capture status** command to check whether the configuration succeeds.

10.4 packet capture start

Use this command to start capturing packets.
packet capture start

Use this command to stop capturing packets.
packet capture stop

Parameter Description

Parameter	Description
start	Starts capturing packets.
stop	Stops capturing packets.

Command Mode Privileged EXEC mode

Usage Guide

1. If the **packet capture stop** command is not entered after packet capture starts, the packet capture will automatically stop at the capture point when the number of captured packets reaches the specified number. If the packet capture stop condition is not met, run the **packet capture stop** command to immediately stop the packet capture.
2. Use the packet capture start command to capture packets at all capture points simultaneously.

Configuration Example The following example starts capturing packet.

```
Ruijie# packet capture start
```

Verification Run the **show packet capture status** command to check whether the configuration succeeds.

10.5 show packet capture status

Use this command to display the packet capture information.
show packet capture status

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode

Usage Guide Use this command to display the packet capture information.

Configuration Example N/A

The following example displays the packet capture information as follows:

```
Ruijie#show packet capture status

Capture rules:
   Capture rules tcp:
      etype: 0x0800
      source MAC: 2222.2222.2222
      destination  MAC: 1111.1111.1111
      protocol: 0x6
      source IP: 10.10.10.3
      destination  IP: 10.10.10.10
      source port: 5
      destination  port: 10

Capture points:
   Capture point controlplane:
      Capture rules: tcp
      location: control-plane
      direction: all
      status: stopped
      packets captured(in): 200
      packets captured(out): 200

Capture file:
   filename: /tmp/test.pcap
      buffer size: 2(MB)
      packets limit: 500
Ruijie#
```

Field description:

Field	Description
Capture rule	Name of a capture rule
etype	Layer-2 protocol type
source MAC	Source MAC address
destination MAC	Destination MAC address
protocol	Layer-3 protocol type

source IP	Source IP address
destination IP	Destination IP address
source port	Source port
destination port	Destination port
Capture point	Name of a capture point
location	Location of a capture point
direction	Packet capture direction
buffer size	Buffer size
packets limit	Quantity limit of captured packets
filename	Name of an output file
status	Packet capture status
packets captured	Number of captured packets

N/A

11 HAM Commands

1.1 ham single-process-ha auto-restart enable

Use this command to enable the HA service of a process that restarts frequently. Use the **no** form of this command to disable the HA service of a process that restarts frequently. Use the **default** form of this command to restore the default configuration for the HA service of a process that restarts frequently.

ham single-process-ha auto-restart enable

no ham single-process-ha auto-restart enable

default ham single-process-ha auto-restart enable

Parameter Description

Parameter	Description
default	Indicates that the HA service of a process that restarts frequently is enabled by default.

Defaults The HA service of a process that restarts frequently is enabled by default.

Command Mode Global configuration mode

Default Level 14

Usage Guide This command to is used to enable the HA service of a process that restarts frequently. Before patches are used for an upgrade, you can disable the HA service of a single process that restarts frequently. After the patch-based upgrade is completed, confirm that no process restarts frequently and then enable the HA service of the process that restarts frequently.

⚠ Disabling this HA service can lead to a longer failure time when a process frequently restarts. Therefore, you are not recommended to disable the configuration in scenarios other than patch-based upgrades.

Configuration Examples The following example disables the HA service of a process that restarts frequently.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# no ham single-process-ha auto-restart enable
Ruijie(config)#
```

The following example enables the HA service of a process that restarts frequently.

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# ham single-process-ha auto-restart enable
Ruijie(config)#
```

Verification Run the **show running-config | include ham** command to check whether the HA service of a

process that restarts frequently is enabled or disabled.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# no ham single-process-ha auto-restart enable
Ruijie(config)# show running-config | include ham
no ham single-process-ha auto-restart enable
Ruijie(config)# ham single-process-ha auto-restart enable
Ruijie(config)# show running-config | include ham
Ruijie(config)#
```

12 VAP Commands

2.1 clear vap data-sync

Use this command to clear data records of the data synchronization channel.

clear vap data-sync

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide This command is used to clear data records of the data synchronization channel.

Configuration Examples The following example clears data records of the data synchronization channel.

```
Ruijie# clear vap data-sync
```

2.2 clear vap keepalive

Use this command to clear data records of the heartbeat channel.

clear vap keepalive

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide This command is used to clear data records of the heartbeat channel.

Configuration Examples The following example clears data records of the heartbeat channel.

```
Ruijie# clear vap keepalive
```

2.3 clear vap mac

Use this command to clear MAC operation records.

clear vap mac record

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide This command is used to clear MAC operation records.

Configuration Examples The following example clears MAC operation records.

```
Ruijie# clear vap mac record
```

2.4 clear vap xmac

Use this command to clear VXLAN MAC operation records.

clear vap xmac record

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide This command is used to clear VXLAN MAC operation records.

Configuration Examples The following example clears VXLAN MAC operation records.

```
Ruijie# clear vap xmac record
```

2.5 data-sync

Use this command to configure a data synchronization channel. Use the **no** form of this command to delete the data synchronization channel.

data-sync local {*ip-address* | *ipv6-address*} **peer** {*ip-address* | *ipv6-address*}

no data-sync

Parameter Description

Parameter	Description
Local	Configures the local IP address for the data synchronization channel.
peer	Configures the peer IP address for the data synchronization channel.
ip-address	Indicates an IPv4 address.
Ipv6-address	Indicates an IPv6 address.

Defaults No data synchronization channel is configured by default.

Command Mode VAP domain configuration mode

Default Level 14

Usage Guide Data is synchronized between VAP devices through a layer-3 IP network and this configuration is required on each VAP device.
Either IPv4 or IPv6 addresses can be configured.

Configuration Examples The following example configures a data synchronization channel with the local IP address of 192.168.1.1 and peer IP address of 192.168.1.2.

```
Ruijie(config)# vap domain 1
Ruijie(config-vap)# data-sync local 192.168.1.1 peer 192.168.1.2
```

The following examples configures a data synchronization channel with the local IP address of 2001::1/64 and peer IP address of 2001::2/64.

```
Ruijie(config)# vap domain 1
Ruijie(config-vap)# data-sync local 2001::1/64 peer 2001::2/64
```

Verification Run the **show running-config** command to display the configuration.

Prompt Message 1. If an IPv4 address has been configured in this command, no IPv6 address can be configured.

```
Can not configure IPv6 due to IPv4 already exist.
```

2. If an IPv6 address has been configured in this command, no IPv4 address can be configured.

```
Can not configure IPv4 due to IPv6 already exist.
```

Common Errors Either IPv4 addresses or IPv6 addresses can be configured.

2.6 domain-match delay

Use this command to configure the domain matching delay. Use the **no** form of this command to restore the domain matching delay.

domain-match delay *interval*

no domain-match delay

Parameter Description

Parameter	Description
interval	Indicates the delay, in seconds. The value ranges from 10 to 1,000.

Defaults The default delay is 360s.

Command Mode VAP domain configuration mode

Default Level 14

Usage Guide Interfaces added to a VAP need to use the same MAC address and priority during LACP negotiation. Therefore, the two devices need to use negotiation packets of the VAP for negotiation. If the devices work in standalone mode and APs on the devices are added to a VAP, the devices cannot start negotiation. In this case, the VAP instructs LACP to start negotiation after a delay of 360 seconds by default, and the local MAC address and priority are used for LACP negotiation. For standalone devices, they start LACP negotiation immediately after APs are removed from the VAP.

Configuration Examples The following example sets the delay to 100s.

```
Ruijie(config)# vap domain 1
Ruijie(config-vap)# domain-match delay 100
```

Verification Run the **show running-config** command to display the configuration.

2.7 dual-active auto recovery

Use this command to configure the dual-active automatic recovery mode. Use the **no** form of this command to cancel the dual-active automatic recovery mode.

dual-active auto recovery

no dual-active auto recovery

Parameter Description

Parameter	Description
N/A	N/A

Defaults The dual-active automatic recovery mode is not configured by default.

Command Mode VAP configuration mode

Default Level 14

Usage Guide When the dual-active mode is detected, interfaces on the slave device are shut down. If dual-active automatic recovery is enabled, after the master device malfunctions, service ports on the slave device are restored.

When the MGMT port is configured to detect the dual-active mode, dual-active automatic recovery is enabled automatically. When a service port is configured to detect the dual-active mode, dual-active automatic recovery is disabled by default. You can determine whether to enable this function based on the deployment scenario:

1) When the dual-active detection port is a port that directly connects two devices, configure the directly connected port as an exceptional port for dual-active detection (by running the vap dad-down except command), and then enable dual-active automatic recovery.
2) If the dual-active detection port is not a directly connected port of two devices (for example, uplink port), dual-active automatic recovery cannot be enabled. Otherwise, repeated flapping will occur during dual-active detection.

Configuration Examples The following example enables the dual-active automatic recovery mode.

```
Ruijie(config)# vap domain 1
Ruijie(config-vap)# dual-active auto recovery
```

Verification Run the **show running-config** command to display the configuration.

2.8 fast-convergence

Use this command to configure VAP fast convergence. Use the **no** form of this command to cancel VAP fast convergence.

fast-convergence

no fast-convergence

Parameter Description

Parameter	Description
N/A	N/A

Defaults Fast convergence is enabled by default.

Command Mode VAP configuration mode

Default Level 14

Usage Guide After fast convergence is configured, the VAP fault convergence time is minimized. However, there may be considerable packets instantaneously.

Configuration Examples The following example disables fast convergence.

```
Ruijie(config)# vap domain 1
Ruijie(config-vap)# no fast-convergence
```

Verification Run the **show running-config** command to display the configuration.

2.9 peer-keepalive

Use this command to configure a VAP heartbeat link. Use the **no** form of this command to delete the heartbeat configuration.

peer-keepalive local { *ip-address* | *ipv6-address* } **peer** { *ip-address* | *ipv6-address* } [*interface-type interface-number*]

no peer-keepalive

Parameter Description

Parameter	Description
local	Configures the local IP address of the heartbeat link.
peer	Configures the peer IP address of the heartbeat link.
ip-address	Indicates an IPv4 address.
Ipv6-address	Indicates an IPv6 address.

interface-type	Indicates the interface type. Only MGMT interfaces are supported.
interface-number	Indicates an interface number. All MGMT interfaces are supported.

Defaults No heartbeat link is configured by default.

Command Mode VAP domain configuration mode

Default Level 14

Usage Guide When the peer-link fails but the heartbeat link is normal, interfaces other than the MGMT interface, heartbeat interface, peer-link interface, and stacked interface on the slave device are triggered to enter the error down state. The interfaces return to the normal state after the peer-link is restored.
Either IPv4 or IPv6 addresses can be configured.

Configuration Examples The following example configures a heartbeat link with the local IP address of 192.168.1.1 and peer IP address of 192.168.1.2.

```
Ruijie(config)# vap domain 1
Ruijie(config-vap)# peer-keepalive local 192.168.1.1 peer 192.168.1.2
```

The following example configures a heartbeat link with the local IP address of 2001::1/64 and peer IP address of 2001::2/64.

```
Ruijie(config)# vap domain 1
Ruijie(config-vap)# peer-keepalive local 2001::1/64 peer 2001::2/64
```

Verification Run the **show running-config** command to display the configuration.

Prompt Message 1. If an IPv4 address has been configured for dual-active detection, no IPv6 address can be configured for it.

```
Can not configure IPv6 due to IPv4 already exist.
```

2. If an IPv6 address has been configured for dual-active detection, no IPv4 address can be configured for it.

```
Can not configure IPv4 due to IPv6 already exist.
```

Common Errors Either IPv4 addresses or IPv6 addresses can be configured.

2.10 peer-keepalive hold-time

Use this command to configure the heartbeat holding time. Use the **no** form of this command to restore the default heartbeat holding time.

peer-keepalive hold-time *interval*

no peer-keepalive hold-time

Parameter Description

Parameter	Description
Interval	Indicates the heartbeat holding time, in seconds. The value ranges from 3 to 60.

Defaults The default value is 3 seconds.

Command Mode VAP domain configuration mode

Default Level 14

Usage Guide After the peer-link fails, the heartbeat link is retained for a period of time by default. After the time expires, if the heartbeat link is still normal, service interfaces on the slave device will enter error down state.

Configuration Examples The following example sets the heartbeat holding time to 30 seconds.

```
Ruijie(config)# vap domain 1
Ruijie(config-vap)# peer-keepalive hold-time 30
```

Verification Run the **show running-config** command to display the configuration.

2.11 peer-link

Use this command to configure an AP as the peer-link. Use the **no** form of this command cancel the peer-link configuration of an AP.

peer-link

no peer-link

Parameter Description

Parameter	Description
N/A	N/A

Defaults An AP is not the peer-link by default.

Command Mode	Interface configuration mode
Default Level	14
Usage Guide	When the remote member interface of a VAP works properly, traffic from the peer-link is not forwarded through the local member interface, in an effort to prevent loops. When the remote member interface of the VAP fails, traffic is switched to the peer-link and the traffic needs to be forwarded through the local member interface.

Configuration Examples	The following example configures AP 10 as the peer-link.
	`Ruijie(config)# interface Aggregateport 10`
	`Ruijie(config-if- if-Aggregateport 10)# peer-link`

Verification	Run the **show running-config** command to display the configuration.
Prompt Message	An AP added to a VAP cannot be configured as the peer-link. `% Can not set peer link due to this interface already join group`
Common Errors	Non-APs cannot be configured as the peer-link.

2.12 priority

Use this command to configure the priority. Use the **no** form of this command to restore the default priority.

priority *priority*

no priority

Parameter Description	**Parameter**	**Description**
	priority	Indicates the priority. The value ranges from 0 to 7.

Defaults	The default priority is 4.
Command Mode	VAP domain configuration mode
Default Level	14

Usage Guide VAP devices negotiate to determine their master/slave state after establishing communication. The master/slave negotiation rules are as follows:

1) The device with a higher priority is elected as the master device.
2) If the devices share the same priority, the device with a smaller MAC address is elected as the master device.

Configuration Examples The following example sets the priority to 7.

```
Ruijie(config)# vap domain 1
Ruijie(config-vap)# priority 7
```

Verification Run the **show running-config** command to display the configuration.

2.13 vap error-down except

Use this command to configure an error down exceptional port. Use the **no** form of this command to delete an error down exceptional port.

vap error-down except

no vap error-down except

Parameter Description

Parameter	Description
N/A	N/A

Defaults No error down exceptional port is configured by default.

Command Mode Interface configuration mode

Default Level 14

Usage Guide After the VAP detects the dual-active mode, it brings physical ports on the slave device to the error down state. To prevent an interface from entering error down state, you can run this command to configure it as an exceptional port.
Within the interface recovery delay, physical ports are still in error down state.

Configuration Examples The following example configures interface Ten 0/1 as an error down exceptional interface.

```
Ruijie(config)# interface TenGigabitEthernet 0/1
Ruijie(config-if-TenGigabitEthernet 0/1)# vap error-down except
```

Verification Run the **show running-config** command to display the configuration.

Prompt Message An AP that has been added to a VAP cannot be configured as an error down exceptional interface.

```
% Can not set dad-down except due to this interface already join
group.
```

2.14 vap domain

Use this command to configure a domain ID. Use the **no** form of this command to delete the configured domain ID.

vap domain *domain-id*

no vap domain

Parameter Description

Parameter	Description
domain-id	Indicates a domain ID. The value ranges from 1 to 255.

Defaults No domain ID is configured by default.

Command Mode Global configuration mode

Default Level 14

Usage Guide Only one domain ID can be configured on one device. VAP negotiation succeeds only when domain IDs on two devices are the same.

Configuration Examples The following example sets the domain ID of the device to 1.

```
Ruijie(config)# vap domain 1
Ruijie(config-vap)#
```

Verification Run the **show running-config** command to display the configuration.

Prompt Message A domain ID has been configured.

```
% Can not create a new domain due to only one domain supported.
```

Common Errors The domain IDs of two VAP devices do not match.

2.15 vap

Use this command to add an AP to a VAP. Use the **no** form this command to delete an AP from a VAP.

vap *vap-id*

no vap

Parameter Description	Parameter	Description
	vap-id	Indicates the ID of a VAP. The value ranges from 1 to 65,535.

Defaults An AP is not added to a VAP by default.

Command Mode Interface configuration mode

Default Level 14

Usage Guide APs on the two VAP devices providing dual-homing access must be added to the same VAP. One AP can be added to only one VAP.

Configuration Examples The following example adds AP 1 to VAP 1.

```
Ruijie(config)# interface Aggregateport 1
Ruijie(config-if -Aggregateport 1)# vap 1
```

Verification Run the **show vap** command to display the VAP, to which an AP belongs.

Prompt Message An AP configured as the peer-link cannot be added to a VAP.

```
% Can not join group due to already peer link set.
```

2.16 recover up-delay

Use this command to configure the interface recovery delay. Use the **no** form of this command to restore the interface recovery delay to the default value.

recover up-delay *interval* **[none-vap** *none-vap-interval* **]**

no recover up-delay

Parameter Description	Parameter	Description
	Interval	Indicates the delay for a VAP interface to recover to the up state, in seconds. The value ranges from 0 to 3,600.
	none-vap-interval	Indicates the delay for a non-VAP interface to recover to the up state, in seconds. The value ranges from 0 to 3,600.

Defaults The default recovery delay of VAP interfaces is 120s.
There is no delay in the recovery of non-VAP interfaces by default.

Command Mode	VAP domain configuration mode
Default Level	14
Usage Guide	When dual master devices are restored and devices are restored via restart, VAP interfaces are restored with a delay of 120s while non-VAP interfaces are restored without delay.

Configuration Examples	The following example sets the recovery delay to 30 seconds for VAP interfaces and to 10 seconds for non-VAP interfaces.
	`Ruijie(config)# vap domain 1`
	`Ruijie(config-vap)# recover up-delay 30 none-vap 10`

Verification	Run the **show running-config** command to display the configuration.

2.17 show vap

Use this command to display information about a VAP.
show vap [*id*]

Parameter Description

Parameter	Description
id	Indicates the ID of a VAP. The value ranges from 1 to 65,535.

Defaults	N/A
Command Mode	Privileged EXEC mode
Default Level	14
Usage Guide	This command is used to display information about a VAP, including the local member interface and remote member interface.

Configuration Examples The following example displays information about all VAPs.

```
Ruijie# show vap
Vap domain: 1, Dev id: 1
Vap groups: 2

Vap 1
Local Aggregateport 1:
 GigabitEthernet 0/1 is up
 GigabitEthernet 0/2 is up
Remote Aggregateport 1:
 GigabitEthernet 0/1 is up
 GigabitEthernet 0/2 is up

Vap 2
Local Aggregateport 2:
 GigabitEthernet 0/3 is up
Remote Aggregateport 2:
 GigabitEthernet 0/3 is up
```

Field description:

Field	Description
Vap domain	Domain ID
Dev id	Device ID
Vap groups	Number of VAPs
Vap	VAP
Local Aggregateport	Local AP of the VAP
Remote Aggregateport	Remote AP of the VAP
GigabitEthernet 0/1 is up	Member port of an AP and its status

2.18 show vap data-sync

Use this command to display information about a data synchronization channel.

show vap data-sync

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide This command is used to display information about packets transmitted and received by the data synchronization channel.

Configuration Examples The following example displays information about packets transmitted and received by the data synchronization channel.

```
Ruijie# show vap data-sync
Data-sync peer 192.168.1.101, role master
 Message MAC send 5
 Message HELLO send 100
 Message MAC recv 4
 Message HELLO recv 100
```

Field description:

Field	Description
Data-sync peer 192.168.1.101	Peer IP address of the data synchronization channel
role master	The peer is the master device.
Message MAC send 5	Number of sent MAC packets
Message HELLO send 100	Number of sent Hello packets
Message MAC recv 4	Number of received MAC packets
Message HELLO recv 100	Number of received Hello packets

2.19 show vap error-down

Use this command to display the error down interface list and exceptional interface list.

show vap error-down [**except**]

Parameter Description

Parameter	Description
except	Displays a list of error down exceptional interfaces.

Defaults N/A

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide When the VAP detects the dual-active mode and the startup of a device, it brings interfaces on the device to the error down sate. After the dual-active mode is cleared, the VAP delays the recovery of these interfaces. An interface configured as an exceptional interface will not be brought to the error down state and can recover normally. This command can be used to display a list of interfaces in the error down state and a list of exceptional interfaces.

Configuration Examples The following example displays a list of interfaces in the error down state.

```
Ruijie# show vap error-down
Error-down interfaces:
 TenGigabitEthernet 0/2
 FortyGigabitEthernet 0/52
```

Field description:

Field	Description
Error-down interfaces:	List of error down interfaces. The list is not displayed if no interface is in the error down state.
TenGigabitEthernet 0/2	The 10G interface 0/2 is in the error down state.
FortyGigabitEthernet 0/52	The 40G interface 0/52 is in the error down state.

The following example displays a list of error down exceptional interfaces.

```
Ruijie# show vap error-down except
Except interfaces:
 TenGigabitEthernet 0/2
 FortyGigabitEthernet 0/52
```

Field description:

Field	Description
Except interfaces:	List of error down exceptional interfaces. The list is not displayed if there is no error down exceptional interface.
TenGigabitEthernet 0/2	The 10G interface 0/2 is an exceptional interface.
FortyGigabitEthernet 0/52	The 40G interface 0/52 is an exceptional interface.

2.20 show vap keepalive

Use this command to display information about the heartbeat channel.

show vap keepalive

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide This command is used to display information about packets sent and received by the heartbeat channel.

Configuration Examples The following example displays information about packets sent and received by the heartbeat channel.

```
Ruijie# show vap keepalive
Keepalive peer 192.168.2.101
Message HELLO send 421
 Message HELLO recv 417
```

Field description:

Field	Description
Keepalive peer 192.168.2.101	Peer IP address of the heartbeat channel
Message HELLO send 421	Number of sent Hello packets
Message HELLO recv 417	Number of received Hello packets

2.21 show vap mac

Use this command to display MAC entry information.

show vap mac [**count** | **local | remote | vlan** *vlan-id* [**mac-address** *address*] | **record** [**vlan** *vlan-id* [**mac-address** *address*]]]

Parameter Description

Parameter	Description
count	Displays the MAC entry statistical value.

local	Displays the local MAC entry.
remote	Displays the remotely synchronized MAC entry.
record	Displays MAC operation records.
vlan	Displays the MAC entry information about a specified VLAN ID.
vlan-id	VLAN ID
mac-address	Displays the MAC entry information about a specified address.
address	Indicates the MAC address.

Defaults N/A

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide This command is used to display MAC entry information.

Configuration Examples The following example displays MAC entry information.

```
Ruijie# show vap mac
Vlan    MAC Address       Location      Address Type    Sequence
Group    Interface
1      00d0.f822.3441    Local        Dynamic        0          2
AggregatePort 2
1      00d0.f822.3432    Remote       Dynamic        1          2
AggregatePort 2
```

Field description:

Field	Description
Vlan	VLAN ID
MAC Address	MAC address
Location	Source device of a learned MAC entry Local: Indicates that the MAC entry is learned locally. Remote: Indicates that the MAC entry is synchronized from the peer device.
Address Type	Type of the MAC address Dynamic: Indicates a dynamic MAC address. Local: Indicates a local MAC address.
Sequence	Serial number
Group	VAP
Interface	Egress of the MAC entry

The following example displays MAC address statistics.

```
Ruijie# show vap mac count
Total Address Count: 12
  Local Address Count: 6
  Remote Address Count: 6
```

Field description:

Field	Description
Total Address Count	Total number of MAC addresses
Local Address Count	Number of local MAC addresses
Remote Address Count	Number of remote MAC addresses

2.22 show vap peer-link

Use this command to display information about the peer-link.

show vap peer-link

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode	Privileged EXEC mode
Default Level	14
Usage Guide	This command is used to display information about the peer-link.
Configuration Examples	The following example displays information about the peer-link.

```
Ruijie# show vap peer-link
Peer-link AggregatePort 1 is UP
  TenGigabitEthernet 0/1 is UP
```

Field description:

Field	Description
AggregatePort 1 is UP	Status of a peer-link AP
GigabitEthernet 0/1 is up	Member interface of the peer-link and its status

2.23 show vap xmac

Use this command to display VXLAN MAC entry information.

show vap xmac [**count** | **local | remote | vxlan** *vxlan-id* [**mac-address** *address*] | **record** [**vxlan** *vxlan-id* [**mac-address** *address*]]

Parameter Description

Parameter	Description
Count	Displays the VXLAN MAC entry statistical value.
local	Displays the local VXLAN MAC entry.
remote	Displays the remotely synchronized VXLAN MAC entry.
record	Displays VXLAN MAC operation records.
vxlan	Displays the MAC entry information about a specified VXLAN ID.
vxlan-id	Indicates a VXLAN ID.
mac-address	Displays the VXLAN MAC entry information about a specified address.
address	Indicates the MAC address.

Defaults N/A

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide This command is used to display VXLAN MAC entry information.

Configuration Examples The following example displays VXLAN MAC entry information.

```
Ruijie# show vap xmac
Vxlan   MAC Address       Location      Address Type    Sequence
Group    Interface
1      00d0.f822.3441    Local        Dynamic        0          2
AggregatePort 2
1      00d0.f822.3432    Remote       Dynamic        1          2
AggregatePort 2
```

Field description:

Field	Description
Vxlan	VXLAN ID
MAC Address	MAC address
Location	Source device of a learned MAC entry Local: Indicates that the MAC entry is a local entry. Remote: Indicates that the MAC entry is synchronized from the peer device.
Address Type	Type of the MAC address Dynamic: Indicates a dynamic MAC address. Local: Indicates a local MAC address.
Sequence	Serial number
Group	VAP
Interface	Egress of the MAC entry

The following example displays VXLAN MAC address statistics.

```
Ruijie# show vap xmac count
Total Address Count: 12
  Local Address Count: 6
  Remote Address Count: 6
```

Field description:

Field	Description
Total Address Count	Total number of VXLAN MAC addresses
Local Address Count	Number of local VXLAN MAC addresses
Remote Address Count	Number of remote VXLAN MAC addresses

Network Management Configuration Commands

1. SNMP Commands
2. RMON Commands
3. NTP Commands
4. SNTP Commands
5. SPAN-RSPAN Commands
6. ERSPAN Commands
7. sFlow Commands
8. IPFIX Commands
9. NETCONF Commands
10. gRPC Commands
11. IFA Commands
12. PSR Commands

1 SNMP Commands

1.1 no snmp-server

Use this command to disable the SNMP agent function.

no snmp-server

Parameter Description

Parameter	Description
N/A	N/A

Defaults SNMP agent is enabled by default.

Command mode Global configuration mode.

Usage Guide This command disables the SNMP agent services of all versions supported on the device.

Configuration Examples The following example disables the SNMP agent.

```
Ruijie(config)# no snmp-server
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.2 show snmp

Use this command to display the SNMP configuration.

show snmp [**mib** | **user** | **view** | **group| host | process-mib-time**]

Parameter Description

Parameter	Description
mib	Displays the SNMP MIBs supported.
user	Displays the SNMP user information.
view	Displays the SNMP view information.
group	Displays the SNMP user group information.
host	Displays the explicit host configuration.
process-mib-time	Displays the MIB node requiring the longest processing time.

Defaults N/A

Command mode Privileged EXEC mode.

Usage Guide N/A

Configuration Examples The example below displays the SNMP configuration:

```
Ruijie# show snmp
Chassis: 60FF60
0 SNMP packets input
       0 Bad SNMP version errors
       0 Unknown community name
       0 Illegal operation for community name supplied
       0 Encoding errors
       0 Number of requested variables
       0 Number of altered variables
       0 Get-request PDUs
       0 Get-next PDUs
       0 Set-request PDUs
0 SNMP packets output
       0 Too big errors (Maximum packet size 1472)
       0 No such name errors
       0 Bad values errors
       0 General errors
       0 Response PDUs
       0 Trap PDUs
SNMP global trap: disabled
SNMP logging: disabled
SNMP agent: enabled
```

Related Commands

Command	Description
snmp-server chassis-id	Specifies the SNMP system sequence number.

Platform Description N/A

1.3 snmp trap link-status

Use this command to enable the interface to send link traps. Use the **no** form of this command to disable the interface to send link traps.

snmp trap link-status

no snmp trap link-status

Parameter Description

Parameter	Description
N/A	N/A

Defaults Sending link traps on the interface is enabled by default. If the interface link status changes, SNMP link traps will be sent.

Command mode Interface configuration mode

Usage Guide This command can be configured on the Ethernet interface, aggregate ports and SVI interfaces.

Configuration Examples The following example disables the interface to send link traps.

```
Ruijie(config)# interface gigabitEthernet 1/1
Ruijie(config-if-GigabitEthernet 1/1)# no snmp trap link-status
```

The following example enables the interface to send link traps.

```
Ruijie(config)# interface gigabitEthernet 1/1
Ruijie(config-if-GigabitEthernet 1/1)# snmp trap link-status
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.4 snmp-server chassis-id

Use this command to specify the SNMP chassis ID. Use the **no** form of this command to restore the default chassis ID.

snmp-server chassis-id *text*

no snmp-server chassis-id

Parameter Description

Parameter	Description
text	SNMP chassis ID: numerals or characters.

Defaults The default is 60FF60.

Command mode Global configuration mode.

Usage Guide The SNMP chassis ID is generally the serial number of the device to facilitate identification. The SNMP chassis ID can be displayed through the **show snmp** command.

Configuration Examples The following example specifies the SNMP chassis ID as 123456:

```
Ruijie(config)# snmp-server chassis-id 123456
```

Related Commands

Command	Description
show snmp	Displays the SNMP configuration.

Platform Description N/A

1.5 snmp-server community

Use this command to specify the SNMP community access string. Use the **no** form of this command to remove the SNMP community access string.

snmp-server community [0 | 7] *string* [**view** *view-name*] [[**ro** | **rw**] [**host** *ipaddr*] [**ipv6** *ipv6-aclname*] [*aclnum*] [*aclname*]

no snmp-server community [0 | 7] *string*

Parameter Description

Parameter	Description
0	Indicates that the community string is in plaintext.
7	Indicates that the community string is in ciphertext.
string	Community string, which is the communication password between the NMS and the SNMP agent
view-name	View name
ro	Indicates that the NMS can only read the variables of the MIB.
rw	Indicates that the NMS can read and write the variables of the MIB.
aclnum	Access list number (1 to 199, and 1300 to 2699), which specifies the IPV4 addresses that are permitted to access the MIB.
aclname	Access list name, which specifies the IPV4 addresses that are permitted to access the MIB.
ipv6-aclname	IPv6 access list name, which specifies the IPv6 addresses that are permitted to access the MIB.
ipaddr	Specifies the IP address of the NMS to access the MIB.

Defaults All communities are read only by default.

Command mode Global configuration mode.

Usage Guide This command is an essential command to enable the SNMP agent function, such as specifying the community attribute and IP addresses of NMS to access the MIB.
To disable the SNMP agent function, use the **no snmp-server** command.

Configuration Examples The following example defines a SNMP community access string named public, which can be read-only.

```
Ruijie(config)# snmp-server community public ro
```

Related Commands

Command	Description
access-list	Defines an access list.

Platform Description N/A

1.6 snmp-server contact

Use this command to specify the system contact string. Use the **no** form of this command to remove the system contact string.
snmp-server contact *text*
no snmp-server contact

Parameter Description

Parameter	Description
text	Defines a system contact string.

Defaults No system contact string is set by default.

Command mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example specifies the SNMP system contract i-net800@i-net.com.cn:

```
Ruijie(config)# snmp-server contact i-net800@i-net.com.cn
```

Related Commands

Command	Description
show snmp-server	Displays the SNMP configuration.
no snmp-server	Disables the SNMP agent function.

Platform Description N/A

1.7 snmp-server enable traps

Use this command to enable the SNMP agent to send the SNMP trap massage to NMS. Use the **no** form of this command to disable the SNMP agent to send the SNMP trap massage to NMS.

snmp-server enable traps [*notification-type*]

no snmp-server enable traps

Parameter Description

Parameter	Description
notification-type	Specifies the type of trap messages. snmp: SNMP trap message bgp: BGP trap message. bridge: Bridge trap message. isis: ISIS trap message. mac-notification: MAC trap message. ospf: OSPF trap message. urpf: uRPF trap message. vrrp: VRRP trap message. web-auth: Web authentication trap message.

Defaults Sending trap message to the NMS is disabled by default.

Command mode Global configuration mode.

Usage Guide This command must be used together with the **snmp-server host** command to send the trap message. Specifying no trap type indicates all trap messages are sent.

Configuration Examples The following example enables the SNMP agent to send the SNMP trap message.

```
Ruijie(config)# snmp-server enable traps snmp
Ruijie(config)# snmp-server host 192.168.12.219 public snmp
```

Related Commands

Command	Description
snmp-server host	Specifies the SNMP host to send the SNMP trap message.

Platform Description N/A

1.8 snmp-server flow-control

Use this command to configure the SNMP flow control. Use the **no** form of this command to remove

restore the default setting.

snmp-server flow-control pps [*count*]

no snmp-server flow-control pps

Parameter Description

Parameter	Description
count	Indicates the number of SNMP requests processed per second, ranging from 50 to 65,535.

Defaults The default count is 300.

Command mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example configures the number of SNMP requests processed per second to 200.

```
Ruijie(config)# snmp-server flow-control pps 200
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.9 snmp-server group

Use this command to configure a new SNMP group**.** Use the **no** form of this command to remove a specified SNMP group.

snmp-server group *groupname* { **v1** | **v2c** | **v3** { **auth** | **noauth** | **priv** } } [**read** *readview*] [**write** *writeview*] [**access** { [**ipv6** *ipv6_aclname* | *aclnum* | *aclname* }]

no snmp-server group *groupname* {**v1** | **v2c** | **v3** { **auth** | **noauth** | **priv** } }

Parameter Description

Parameter	Description
v1 | **v2c** | **v3**	Specifies the SNMP version
auth	Specifies authentication of a packet without encrypting it. This applies to SNMPv3 only.
noauth	Specifies no authentication a packet. This applies to SNMPv3 only.
priv	Specifies authentication of a packet with encryption. This applies to SNMPv3 only.
readview	Specifies a read-only view for the SNMP group. This view enables

	you to view only the contents of the agent.
writeview	Specifies a write view for the SNMP group. This view enables you to enter data and configure the contents of the agent.
aclnum	Access list number, which specifies the IPV4 addresses that are permitted to access the MIB.
aclname	Name of the access list, which specifies the IPV4 addresses that are permitted to access the MIB.
ipv6_aclname	Name of the IPv6 access list, which specifies the IPv6 addresses that are permitted to access the MIB.

Defaults No SNMP groups are configured by default.

Command mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example configures a new SNMP group.

```
Ruijie(config)# snmp-server group mib2user v3 priv read mib2
```

Related Commands

Command	Description
show snmp group	Displays the SNMP group configuration.

Platform Description N/A

1.10 snmp-server host

Use this command to specify the SNMP host (NMS) to send the trap message. Use the **no** form of this command to remove the specified SNMP host.

snmp-server host [**oob**] { *host-addr* | **ipv6** *ipv6-addr* | **domain** *domain-name* } [**vrf** *vrfname*] [**traps | informs**] [**version** { **1** | **2c** | **3** { **auth** | **noauth** | **priv** }] *community-string* [**udp-port** *port-num*] [**via** *mgmt-name*] [*notification-type*]

no snmp-server host [**oob**] { *host-addr* | **ipv6** *ipv6-addr* | **domain** *domain-name* } [**vrf** *vrfname*] [**traps | informs**] [**version** { **1** | **2c** | **3** { **auth** | **noauth** | **priv** }] *community-string* [**udp-port** *port-num*] [**via** *mgmt-name*]

Parameter Description

Parameter	Description
oob	Indicates the out of band communication, that is, the trap messages are sent to the alarm server through the MGMT port. This option is available only when the device is equipped with the MGMT port.

host-addr	SNMP host address
ipv6-addr	SNMP host address(ipv6)
domain-name	Domain name of the SNMP host
vrfname	Set the name of vrf forwarding table
trap | informs	Enables the host to send the SNMP notification as traps or informs.
version	SNMP version: V1, V2C or V3
auth | **noauth** | **priv**	Security level of SNMPv3 users
community-string	Community string or username (SNMPv3 version)
port-num	Port of the SNMP host
via *mgmt-name*	Specifies the MGMT port.
notification-type	The type of the SNMP trap message, such as **snmp**. If no type of the SNMP trap message is specified, all types of the SNMP trap message will be included.

Defaults No SNMP host is specified by default.

Command mode Global configuration mode.

Usage Guide This command must be used together with the **snmp-server enable traps** command to send the SNMP trap messages to NMS.
Multiple SNMP hosts can be configured to receive the SNMP trap messages. One host can use different combinations of the types of the SNMP trap message, but the last configuration for the same host will overwrite the previous configurations. In other words, to send different SNMP trap messages to the same host, different combination of SNMP trap messages can be configured.
The **via** parameter can take effect only when the **oob** parameter is configured.
The **vrf** parameter cannot be used together with the **oob** parameter.

Configuration Examples The following example specifies an SNMP host to receive the SNMP event trap:

```
Ruijie(config)# snmp-server host 192.168.12.219 public snmp
```

Related Commands

Command	Description
snmp-server enable traps	Enables the SNMP agent to send the SNMP trap message.

Platform Description N/A

1.11 snmp-server inform

Use this command to configure the resend times for inform requests and the inform request timeout**.**
Use the **no** form of this command to restore the default settings.

snmp-server inform [**retries** *retry-time* | **timeout** *time*]
no snmp-server inform

Parameter Description

Parameter	Description
retry-num	Specifies the resend times for inform requests, ranging from 0 to 255.
time	Specifies the inform request timeout, ranging from 0 to 21,474,836.

Defaults The default *retry-num* is 3, and the default **timeout** *time* is 15 seconds.

Command mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example configures the resend times of inform requests to 5.

```
Ruijie(config)# snmp-server inform retries 5
```

The following example configures the inform request timeout to 20 seconds.

```
Ruijie(config)# snmp-server inform timeout 20
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.12 snmp-server location

Use this command to set the system location string. Use the **no** form of this command to remove the system location string.
snmp-server location *text*
no snmp-server location

Parameter Description

Parameter	Description
text	String that describes the system location information.

Defaults No system location string is set by default.

Command mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example sets the system location information:

```
Ruijie(config)# snmp-server location start-technology-city 4F of A Buliding
```

Related Commands

Command	Description
snmp-server contact	Sets the system contact information.

Platform Description N/A

1.13 snmp-server net-id

Use this command to configure the network element coding information of the device. Use the **no** form of this command to remove the network element coding information.

snmp-server net-id *text*

no snmp-server net-id

Parameter Description

Parameter	Description
text	Configures the network element coding information of the device. The text length ranges from 1 to 255. The text is case-sensitive, and may contain spaces.

Defaults No network element coding information is configured by default.

Command mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example configures the network element coding text to FZ_CDMA_MSC1.

```
Ruijie(config)# snmp-server net-id FZ_CDMA_MSC1
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.14 snmp-server packetsize

Use this command to specify the largest size of the SNMP packet. Use the **no** form of this command to restore the default value.

snmp-server packetsize *byte-count*

no snmp-server packetsize

Parameter Description

Parameter	Description
byte-count	Packet size. The range is from 484 to 17,876 bytes

Defaults The default is 1,472 bytes.

Command mode Global configuration mode.

Usage Guide The following example specifies the largest size of SNMP packet as 1,492 bytes:

```
Ruijie(config)# snmp-server packetsize 1492
```

Configuration Examples N/A

Related Commands

Command	Description
snmp-server queue-length	Specifies the length of the message queue for each SNMP trap host.

Platform Description N/A

1.15 snmp-server queue-length

Use this command to specify the length of the message queue for each SNMP trap host. Use the **no** form of this command to restore the default value.

snmp-server queue-length *length*

no snmp-server queue-length

Parameter Description

Parameter	Description
length	Queue length. The range is from 1 to 1000.

Defaults The default is 10.

Command Global configuration mode.

mode

Usage Guide Use this command to adjust the length of message queue for each SNMP trap host for the purposes of controlling the speed of sending the SNMP trap messages.

Configuration Examples The following example specifies the length of message queue as 100.

```
Ruijie(config)# snmp-server queue-length 100
```

Related Commands

Command	Description
snmp-server packetsize	Specifies the largest size of the SNMP packet.

Platform Description N/A

1.16 snmp-server system-shutdown

Use this command to enable the SNMP message reload function. Use the **no** form of this command to disable the SNMP message reload function.

snmp-server system-shutdown

no snmp-server system-shutdown

Parameter Description

Parameter	Description
N/A	N/A

Defaults The SNMP message reload function is disabled by default.

Command mode Global configuration mode.

Usage Guide Use this command to enable the SNMP message reload function which may enable the system to send the device reload traps to the NMS before the device is reloaded or rebooted.

Configuration Examples The following example enables the SNMP message reload function:

```
Ruijie(config)# snmp-server system-shutdown
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.17 snmp-server trap-format private

Use this command to configure the SNMP traps with private fields. Use the **no** form of this command to restore the default trap format.

snmp-server trap-format private

no snmp-server trap-format private

Parameter Description

Parameter	Description
N/A	N/A

Defaults The private field is not carried in the SNMP trap by default.

Command mode Global configuration mode.

Usage Guide Use this command to configure the SNMP trap format with the private field. Currently, the supported data in the private field is alarm occurrence time. For the specific data type and range of each field, refer to RUIJIE-TRAP-FORMAT-MIB.mib file.

This command does not work if the traps are sent with SNMPv1.

Configuration Examples The following example configures the SNMP trap format with the private field.

```
Ruijie(config)# snmp-server trap-format private
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.18 snmp-server trap-source

Use this command to specify the source interface of the SNMP trap message. Use the **no** form of this command to restore the default value.

snmp-server trap-source *interface*

no snmp-server trap-source

Parameter Description

Parameter	Description
interface	Specifies the source interface of the SNMP trap messages.

Defaults By default, the IP address of the interface from which the SNMP packet is sent is just the source address.

Command mode Global configuration mode.

Usage Guide For easy management and identification, you can use this command to fix a local IP address as the SNMP source address.

Configuration Examples The following example specifies the IP address of Ethernet interface 0/1 as the source address of the SNMP trap message:

```
Ruijie(config)# snmp-server trap-source fastethernet 0/1
```

Related Commands

Command	Description
snmp-server enable traps	Enables t the SNMP agent to send the SNMP trap massage to NMS.
snmp-server host	Specifies the NMS host to send the SNMP trap message.

Platform Description N/A

1.19 snmp-server trap-timeout

Use this command to define the retransmission timeout time of the SNMP trap message. Use the **no** form of this command to restore the default value.

snmp-server trap-timeout *seconds*

no snmp-server trap-timeout

Parameter Description

Parameter	Description
seconds	Timeout (in seconds) of retransmit the SNMP trap message. The range is from 1 to 1,000.

Defaults The default is 30 seconds.

Command mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example specifies the timeout period as 60 seconds.

```
Ruijie(config)# snmp-server trap-timeout 60
```

Related Commands

Command	Description
snmp-server queue-length	Specifies the length of message queue for the SNMP trap host.
snmp-server host	Specifies the NMS host to send the SNMP trap message.
snmp-server trap-source	Specifies the source address of the SNMP trap message.

Platform Description N/A

1.20 snmp-server udp-port

Use this command to specify a port to receive SNMP packets**.** Use the **no** form of this command to restore the default setting.

snmp-server udp port *port-number*

no snmp-server udp port

Parameter Description

Parameter	Description
port-number	Specifies a port to receive the SNMP packets.

Defaults The default is 161.

Command mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example specifies port 15000 to receive the SNMP packets.

```
Ruijie(config)# snmp-server udp-port 15000
```

Related Commands

Command	Description

N/A	N/A

Platform Description N/A

1.21 snmp-server user

Use this command to configure a new user to an SNMP group**.** Use the **no** form of this command to remove a user from an SNMP group.

snmp-server user *username groupname* { **v1** | **v2c** | **v3** [**encrypted**] [**auth** { **md5** | **sha** } *auth-password*] [**priv des56** *priv-password*] } [**access** { [**ipv6** *ipv6_aclname*] [*aclnum* | *aclname* }]]

no snmp-server user *username groupname* { **v1** | **v2c** | **v3** }

Parameter Description

Parameter	Description
username	Name of the user on the host that connects to the agent.
groupname	Name of the group to which the user belongs.
v1 | v2c | v3	Specifies the SNMP version. But only SNMPv3 supports the following security parameters.
encrypted	Specifies whether the password appears in cipher text. In cipher text format, you need to enter continuous hexadecimal numeric characters. Note that the authentication password of MD5 has a length of 16 bytes, while that of SHA has a length of 20 bytes. Two characters make a byte. The encrypted key can be used only by the local SNMP engine on the switch.
auth	Specifies which authentication level should be used.
auth-password	Password string (no more than 32 characters) used by the authentication protocol. The system will change the password to the corresponding authentication key.
priv	Encryption mode. des56 refers to 56-bit DES encryption protocol. *priv-password*: password string (no more than 32 characters) used for encryption. The system will change the password to the corresponding encryption key.
md5	Enables the MD5 authentication protocol. While the **sha** enables the SHA authentication protocol.
aclnumber	Access list number, which specifies the IPV4 addresses that are permitted to access the MIB.
aclname	Name of the access list, which specifies the IPV4 addresses that are permitted to access the MIB.
ipv6_aclname	Name of the IPv6 access list, which specifies the IPv6 addresses that

	are permitted to access the MIB.

Defaults N/A

Command mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example configures an SNMPv3 user with MD5 authentication and DES encryption:

```
Ruijie(config)# snmp-server user user-2 mib2user v3 auth md5 authpassstr priv des56 despassstr
```

Related Commands

Command	Description
show snmp user	Displays the SNMP user configuration.

Platform Description N/A

1.22 snmp-server view

Use this command to configure an SNMP view**.** Use the **no** form of this command to remove an SNMP view.

snmp-server view *view-name oid-tree* { **include** | **exclude** }

no snmp-server view *view-name* [*oid-tree*]

Parameter Description

Parameter	Description
view-name	View name
oid-tree	Specifies the MIB object to associate with the view.
include	Includes the sub trees of the MIB object in the view.
exclude	Excludes the sub trees of the MIB object from the view.

Defaults By default, a view is set to access all MIB objects.

Command mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example sets a view that includes all MIB-2 sub-trees (oid is 1.3.6.1).

```
Ruijie(config)# snmp-server view mib2 1.3.6.1 include
```

Related Commands

Command	Description
show snmp view	Displays the SNMP view configuration.

Platform Description N/A

1.23 snmp-server enable version

Use this command to configure the SNMP version**.** Use the **no** form of this command to disable the SNMP version.

snmp-server enable version {**v1** | **v2c | v3**}

no snmp-server enable version {**v1** | **v2c | v3**}

Parameter Description

Parameter	Description
v1	Indicates the SNMP version 1.
v2c	Indicates the SNMP version 2c.
v3	Indicates the SNMP version 3.

Defaults By default, SNMPv3 is enabled, while SNMPv1 and SNMPv2c are disabled.

Command mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example disables SNMP v1.

```
Ruijie(config)# no snmp-server enable version v1
```

Related Commands

Command	Description
show snmp version	Displays the SNMP version.

Platform Description N/A

2 RMON Configuration Commands

2.1 rmon alarm

Use this command to monitor a MIB variable. Use the **no** form of this command to remove the alarm entry.
rmon alarm *number variable interval* {**absolute** | **delta** } **rising-threshold** *value* [*event-number*] **falling-threshold** *value* [*event-number*] [**owner** *ownername*]
no rmon alarm *number*

Parameter description

Parameter	Description
number	Alarm number. The value ranges from 1-65,535.
variable	Alarm variable. The value is a character string consisting of 1 to 255 characters in OID dotted format (the format is entry.integer.instance or a leaf node named .instance, for example. 1.3.6.1.2.1.2.1.10.1).
interval	Sampling interval. The valye ranges from 1 to 2,147,483,647 in the unit of second.
absolute	Absolute sampling. In this mode, when the sampling time arrives, the system directly invokes the variable value.
delta	Delta sampling. In this mode, when the sampling time arrives, the system invokes the delta value of the variable within the sampling interval.
rising-threshold *value*	Rising threshold and the corresponding event number when the threshold is reached. The threshold ranges from -2,147,483,648 to +2,147,483,647.
event-number	The event number ranges from 1 to 65,535.
falling-threshold *value*	Falling threshold and the corresponding event number when the threshold is reached. The threshold ranges from -2,147,483,648 to +2,147,483,647
owner *ownername*	Owner of an entry. The value is a character string consisting of 1 to 63 characters that are case sensitive.

Default N/A.

Command mode Global configuration mode.

Usage guidelines The RGOS allows you to modify the configured history information of the Ethernet network, including variable, absolute/delta, owner, rising-threshold/falling-threshold, and the corresponding events. However, the modification does not take effect immediately until the system triggers the monitoring event at the next time.

Examples The example below monitors the MIB variable instance ifInNUcastPkts.6.

```
Ruijie(config)# rmon alarm 10 1.3.6.1.2.1.2.2.1.12.6 30 delta
rising-threshold 20 1 falling-threshold 10 1 owner zhangsan
```

Related commands

Command	Description
rmon event *number* [**log**] [**trap** *community*] **description** *string* [**owner** *owner-string*]	Adds an event definition.

2.2 rmon collection history

Use this command to enable history statistics on the Ethernet interface. Use the **no** form of this command to remove the history entry.

rmon collection history *index* [**owner** *ownername*] [**buckets** *bucket-number*] [**interval** *seconds*]

no rmon collection history *index*

Parameter description

Parameter	Description
index	Index of a history entry. The value ranges from 1 to 65,535.
owner *ownername*	Owner of an entry. The value is a character string consisting of 1 to 63 characters that are case sensitive.
buckets *bucket-number*	Capacity of a history entry (that is, the maximum number of history entries). The value ranges from 1 to 65,535. The default value is 10.
interval *seconds*	Statistics period. The unit is second. The value ranges from 1 to 3,600. The default value is 1,800 seconds.

Default N/A.

Command mode Interface configuration mode.

Usage guidelines The configured history control entry parameters cannot be modified. And the history entry can be removed from the interface where the entry configured.

Examples The example below enables log statistics on interface GigabitEthernet 0/1.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#interface gigabitEthernet 0/1
Ruijie(config-GigabitEthernet0/1)#rmon collection history 1 owner UserA
buckets 5 interval 60
```

Related commands

Command	Description
rmon collection stats *index* [owner *owner-name*]	Adds a statistical entry on the Ethernet interface.

2.3 rmon collection stats

Use this command to monitor an Ethernet interface. Use the **no** form of this command to remove the configuration.

rmon collection stats *index* [**owner** *owner-string*]

no rmon collection stats *index*

Parameter description

Parameter	Description
index	Index of the statistic table. The value ranges from 1 to 65,535.
owner *ownername*	Owner of an entry. The value is a character string consisting of 1 to 63 characters that are case sensitive and do not contain spaces.

Default N/A.

Command mode Interface configuration mode.

Usage guidelines N/A.

Examples The example below enables monitoring the statistics of interface GigabitEthernet 0/1.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#interface gigabitEthernet 0/1
Ruijie(config-GigabitEthernet0/1)# rmon collection stats 1 owner UserA
```

Related commands

Command	Description
rmon collection history *index* [**owner** *owner-name*] [**buckets** *bucket-number*] [**interval** *seconds*]	Adds a history control entry.

2.4 rmon event

Use this command to define an event. Use the **no** form of this command to remove the event entry.

rmon event *number* [**log**] [**trap** *community*] [*description-string*] [**description** *description-string*] [**owner** *owner-name*]

no rmon event *number*

Parameter description

Parameter	Description
number	Event number. The value ranges from 1 to 65,535.
log	(Optional) Log event. When a log event is triggered, the system records a log.
trap *community*	(Optional) Trap event. When a trap event is triggered, the system sends trap with the group named “community”.
description *description-string*	(Optional) Description of the event. The value is a character string consisting of 1 to 127 characters.

owner *owner-name*	(Optional) Owner of an entry. The value is a character string consisting of 1 to 63 characters that are case sensitive.

Default N/A.

Command mode Global configuration mode.

Usage guidelines N/A.

Examples

The example below defines the event actions: log event and send trap message.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#rmon event 1 log trap public description "ifInNUcastPkts
is abnormal" owner UserA
```

Related commands

Command	Description
rmon alarm *number variable interval* {**absolute** | **delta** } **rising-threshold** *value* [*event-number*] **falling-threshold** *value* [*event-number*] [**owner** *ownername*]	Adds an alarm entry.

2.5 show rmon

Use this command to display the RMON configuration.

show rmon

Default N/A.

Command mode Privileged EXEC mode.

Usage guidelines N/A.

Examples

The example below displays the RMON configuration.

```
Ruijie#show rmon
ether statistic table:
                index = 1
                interface = GigabitEthernet 0/1
                owner = admin
                status = 0
                dropEvents = 61
                octets = 170647461
                pkts = 580375
```

```
                broadcastPkts = 2135
                multiPkts = 3615
                crcAlignErrors = 0
                underSizePkts = 0
                overSizePkts = 0
                fragments = 0
                jabbers = 0
                collisions = 0
                packets64Octets = 3254668
                packets65To127Octets = 1833370
                packets128To255Octets = 2098146
                packets256To511Octets = 126716
                packets512To1023Octets = 363621
                packets1024To1518Octets = 1077865

rmon history control table:
                index = 1
                interface = GigabitEthernet 0/1
                bucketsRequested = 5
                bucketsGranted = 5
                interval = 60
                owner = UserA
                stats = 1

rmon history table:
                index = 1
                sampleIndex = 2485
                intervalStart = 7d:22h:56m:38s
                dropEvents = 0
                octets = 5840
                pkts = 27
                broadcastPkts = 0
                multiPkts = 0
                crcAlignErrors = 0
                underSizePkts = 0
                overSizePkts = 0
                fragments = 0
                jabbers = 0
                collisions = 0
                utilization = 0
rmon alarm table:
                index: 1
                interval: 60
                oid = 1.3.6.1.2.1.2.2.1.12.6
```

```
                sampleType: 2
                alarmValue: 0
                startupAlarm: 3
                risingThreshold: 20
                fallingThreshold: 10
                risingEventIndex: 1
                fallingEventIndex: 1
                owner: UserA
                status: 1

rmon event table:
                index = 1
                description = ifInNUcastPkts is abnormal
                type = 4
                community = public
                lastTimeSent = 0d:0h:0m:0s
                owner =UserA
                status = 1

rmon log table:
                eventIndex = 1
                index = 1
                logTime = 6 d:19 h:21 m:48 s
                logDescription = ifInNUcastPkts is abnormal
```

Related commands	Command	Description
	N/A	N/A

2.6 show rmon alarm

Use this command to display the RMON alarm table.

show rmon alarm

Default N/A.

Command mode Privileged EXEC mode.

Usage guidelines N/A.

Examples The example below displays the RMON alarm table.

```
Ruijie#show rmon alarm
rmon alarm table:
```

```
                index: 1
                interval: 60
                oid = 1.3.6.1.2.1.2.2.1.12.6
                sampleType: 2
                alarmValue: 0
                startupAlarm: 3
                risingThreshold: 20
                fallingThreshold: 10
                risingEventIndex: 1
                fallingEventIndex: 1
                owner: UserA
                status: 1
```

Related commands

Command	Description
rmon alarm *number variable interval* {**absolute** | **delta** } **rising-threshold** *value* [*event-number*] **falling-threshold** *value* [*event-number*] [**owner** *ownername*]	Adds an alarm entry.

2.7 show rmon event

Use this command to display the event configuration.

show rmon event

Default N/A.

Command mode Privileged EXEC mode.

Usage guidelines N/A.

Examples

The example below displays the event configuration.

```
Ruijie#show rmon event
rmon event table:
                index = 1
                description = ifInNUcastPkts is abnormal
                type = 4
                community = public
                lastTimeSent = 0d:0h:0m:0s
                owner =UserA
                status = 1
```

```
rmon log table:
                eventIndex = 1
                index = 1
                logTime = 6d:19h:21m:48s
                logDescription = ifInNUcastPkts is abnormal
```

Related commands

Command	Description
rmon event *number* [**log**] [**trap** *community*] [**description** *description-string*] [**owner** *ownername*]	Adds an event entry.

2.8 show rmon history

Use this command to display the history information.

show rmon history

Default N/A.

Command mode Privileged EXEC mode.

Usage guidelines N/A.

Examples

The example below displays the history information.

```
Ruijie#show rmon history
rmon history control table:
                index = 1
                interface = GigabitEthernet 0/1
                bucketsRequested = 5
                bucketsGranted = 5
                interval = 60
                owner = UserA
                stats = 1

rmon history table:
                index = 1
                sampleIndex = 2485
                intervalStart = 7d:22h:56m:38s
                dropEvents = 0
                octets = 5840
                pkts = 27
                broadcastPkts = 0
                multiPkts = 0
                crcAlignErrors = 0
                underSizePkts = 0
```

```
                overSizePkts = 0
                fragments = 0
                jabbers = 0
                collisions = 0
                utilization = 0
```

Related commands

Command	Description
rmon collection history *index* [owner *ownername*] **[buckets** *bucket-number*] **[interval** *seconds*]	Adds a history control entry.

2.9 show rmon statistics

Use this command to display the RMON statistics.

show rmon statistics

Default N/A.

Command mode Privileged EXEC mode.

Usage guidelines N/A.

Examples

The example below displays the RMON statistics.

```
Ruijie#show rmon statistics
ether statistic table:
                index = 1
                interface = GigabitEthernet 0/1
                owner = admin
                status = 0
                dropEvents = 61
                octets = 170647461
                pkts = 580375
                broadcastPkts = 2135
                multiPkts = 3615
                crcAlignErrors = 0
                underSizePkts = 0
                overSizePkts = 0
                fragments = 0
                jabbers = 0
                collisions = 0
                packets64Octets = 3254668
```

```
packets65To127Octets = 1833370
packets128To255Octets = 2098146
packets256To511Octets = 126716
packets512To1023Octets = 363621
packets1024To1518Octets = 1077865
```

Related commands

Command	Description
rmon collection stats *index* [**owner** *owner-string*]	Adds a statistical entry.

3 NTP Commands

3.1 no ntp

Use this command to disable Network Time Protocol (NTP), and clear all NTP configuration.

no ntp

Parameter Description

Parameter	Description
N/A	N/A

Defaults NTP is disabled by default.

Command mode Global configuration mode.

Usage Guide By default, NTP is disabled. However, once the NTP server or the NTP authentication is configured, the NTP service will be enabled.

Configuration Examples The following example disables NTP.

```
Ruijie(config)#no ntp
```

Related Commands

Command	Description
ntp server	Specifies an NTP server.

Platform Description N/A

3.2 ntp access-group

Use this command to configure an access group to control NTP access. Use the **no** form of this command to remove the peer access group.

ntp access-group { **peer** | **serve** | **serve-only** | **query-only** } *access-list-number* | *access-list-name*

no ntp access-group { **peer** | **serve** | **serve-only** | **query-only** } *access-list-number* | *access-list-name*

Parameter Description

Parameter	Description
peer	Allows the device to receive time requests and NTP control queries to synchronize itself to the servers specified in the access list.

serve	Allows the device to receive time requests and NTP control queries from the servers specified in the access list but not to synchronize itself to the specified servers.
serve-only	Allows the device to receive only time requests from the servers specified in the access list.
query-only	Allows the device to receive only NTP control queries from servers specified in the access list.
access-list-number	Access control list number, ranging from 1 to 99 and 1300 to 1999.
access-list-name	Access control list name.

Defaults No access rule to control NTP access is configured by default, namely, NTP access is granted to all devices.

Command mode Global configuration mode.

Usage Guide Use this command to configure an access group to control NTP access, providing a minimal security measures (more secure way is to use the NTP authentication mechanism).
The NTP service enables the access group options to be scanned in the following order, from least restrictive to most restrictive: **peer**, **serve**, **serve-only**, **query-only**.
If you do not configure any access groups, NTP access is granted to all devices. However, once you configure the access rule, NTP access is granted only to the devices specified in the access list.

⚠ NTP control query is not supported in the current system. Although it matches with the order in accordance with the above rules, the related requests about the control and query are not supported.

Configuration Examples The following example shows how to allow the device to only receive time requests from the device of 192.168.1.1.

```
Ruijie(config)# access-list 1 permit 192.168.1.1
Ruijie(config)# ntp access-group serve-only 1
```

Related Commands

Command	Description
ip access-list	Creates an IP access control list.

Platform Description N/A

3.3 ntp authenticate

Use this command to enable NTP authentication. Use the **no** form of this command to disable NTP

authentication.

ntp authenticate

no ntp authenticate

Parameter Description

Parameter	Description
N/A	N/A

Defaults Disabled.

Command mode Global configuration mode.

Usage Guide If NTP authentication is disabled, the synchronization communication is not encrypted. To enable encrypted communication on the server, enable the NTP authentication and configure other keys globally.

NTP authentication is implemented through the trusted key specified by the **ntp authentication-key** and **ntp trusted-key** commands.

Configuration Examples After an authentication key is configured and specified as the global trusted key, enable NTP authentication.

```
Ruijie(config)#ntp authentication-key 6 md5 wooooop
Ruijie(config)#ntp trusted-key 6
Ruijie(config)#ntp authenticate
```

Related Commands

Command	Description
ntp authentication-key	Sets the global authentication key.
ntp trusted-key	Configures the global trusted key.

Platform Description N/A

3.4 ntp authentication-key

Use this command to configure an NTP authentication key. Use the **no** form of this command to remove the NTP authentication key.

ntp authentication-key *key-id* **md5** *key-string* [*enc-type*]

no ntp authentication-key *key-id*

Parameter Description

Parameter	Description
key-id	Key ID, ranging from 1 to 4294967295.
key-string	Key string

enc-type	(Optional) Whether this key is encrypted, where, 0 indicates the key is not encrypted, 7 indicates the key is encrypted simply. The key is not encrypted by default.

Defaults NTP authentication key is not configured by default.

Command mode Global configuration mode.

Usage Guide Use this command to configure an NTP authentication key and enables the **md5** algorithm for authentication. Each key presents a unique key ID, which can be configured as a trusted key using the **ntp trusted-key** command.
You can configure up to 1024 NTP authentication keys. However, each server can support only one key.

Configuration Examples The following example configures an NTP authentication key.

```
Ruijie(config)ntp authentication-key 6 md5 wooooop
```

Related Commands

Command	Description
ntp authenticate	Enables NTP authentication.
ntp trusted-key	Configures an NTP trusted key.
ntp server	Specifies an NTP server.

Platform Description N/A

3.5 ntp disable

Use this command to disable the device to receive NTP packets on the specified interface.
ntp disable

Parameter Description

Parameter	Description
N/A	N/A

Defaults All NTP packets can be received by default.

Command mode Interface configuration mode.

Usage Guide The NTP message received on any interface can be provided to the client to carry out the clock adjustment. The function can be set to shield the NTP message received from the corresponding interface.

By default, the device receives NTP packets on all interfaces, and adjust clock for the client. You can use this command to disable the device to receive NTP packets on the specified interface.

This command is configured only the interface that can receive and send IP packets.

Configuration Examples The following example disables the device to receive the NTP packets.

```
Ruijie(config-if)# no ntp disable
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.6 ntp master

Use this command to configure the device to act as an authoritative NTP server, synchronizing time to other devices. Use the **no** form of this command to remove the device as an authoritative NTP server.

ntp master [*stratum*]

no ntp master

Parameter Description

Parameter	Description
stratum	Stratum level. The range is from 1 to 15. The default is 8.

Defaults N/A

Command mode Global configuration mode.

Usage Guide In general, the local device synchronizes time from the external time source directly or indirectly. However, if the time synchronization fails due to network connection trouble, you can use this command to configure the local device to act as an authoritative NTP server to synchronize time to t other devices. Once configured, the device will not perform time synchronization with the time source which is of a higher stratum.

Configuring the device to act as an authoritative NTP server (in particular, specify a lower stratum level), may be likely to overwrite the effective time. If multiple devices in the same network are configured with this command, the time synchronization may be instable due to the time difference between the devices.

Before configuring this command, you need to manually correct the system clock to avoid too much bias if the device has never performed time synchronization with the external clock

source.

Configuration Examples The following example configures the device to act as an authoritative NTP server, and sets the stratum level to 12:

```
Ruijie(config)# ntp master 12
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.7 ntp server

Use this command to specify a NTP server for the NTP client. Use the **no** form of this command to delete the specified NTP server.

ntp server[oob | vrf *vrf-name*] { *ip-addr* | *domain* | **ip** *domain* | **ipv6** *domain* } [**version** *version*] [**source** *if-name*] [**key** *keyid*] [**prefer**] [**via** *mgmt-name*]

no ntp server *ip-addr*

Parameter Description

Parameter	Description
vrf *vrf-name*	Specifies the virtual routing and forwarding (VRF) name. By default, this parameter is disabled.
oob	(Optional) Accesses the NTP server from the MGMT interface. By default, this option is disabled.
ip-addr	Sets the IP address of the NTP server. The address can be in IPv4 or IPv6 format.
domain	Sets the domain name of the NTP server, supporting IPv4 and IPv6.
version	(Optional) Specifies the NTP version (1-3). The default is NTPv3.
if-name	(Optional) Specifies the source interface from which the NTP message is sent (L3 interface).
keyid	(Optional) Specifies the encryption key adopted when communication with the corresponding server. The key ID range is from 1 to 4,294,967,295.
prefer	(Optional) Specifies the given NTP server as the preferred one.
mgmt-name	(Optional) Specifies the egress MGMT interface for the packets in oob mode.

Defaults No NTP server is configured by default.

Command Global configuration mode.

mode

Usage Guide At present, RGOS system only supports clients other than servers. Up to 20 servers can be synchronized.
To carry out the encrypted communication with the server, set the global encryption key and global trusted key firstly, and then specify the corresponding key as the trusted key of the server to launch the encrypted communication of the server. It requires the server presents identical global encryption key and global trust key to complete the encrypted communication with the server.
In the same condition (for instance, precision), the prefer clock is used for synchronization.

The source interface of NTP packets must be configured with the IP address and can be communicated with the peer.

Configuration Examples The following example configures an NTP server.
For IPv4: `Ruijie(config)# ntp server 192.168.210.222`
For IPv6: `Ruijie(config)# ntp server 10::2`

Related Commands

Command	Description
no ntp	Disables NTP.

Platform Description N/A

3.8 ntp service disable

Use this command to disable the time synchronization service provided by NTP. Use the **no** form of this command to enable the time synchronization service provided by NTP.
ntp service disable
no ntp service disable

Parameter Description

Parameter	Description
N/A	N/A

Defaults NTP provides the time synchronization service by default.

Command Mode Global configuration mode

Default Level 14

Usage Guide NTP works in client/server mode. After the NTP device synchronizes time from an external reliable clock source, it serves as the time server to provide the time synchronization service. If the device

just needs to be served as an NTP client, configure this command to disable the time synchronization service.

This command and the **ntp master** command are mutually exclusive. When **ntp master** is enabled, the time synchronization service cannot be disabled on the NTP server. If this command is configured, the **ntp master** command cannot be configured.

Configuration Example The following example disables the NTP time synchronization service.

```
Ruijie(config)# ntp service disable
```

Verification Run the **show run | in ntp** command to display the NTP configuration.

Platform Description Supported only by some products.

3.9 ntp trusted-key

Use this command to set a global trusted key. Use the **no** form of this command to remove the global trusted key.

ntp trusted-key *key-id*

no ntp trusted-key *key-id*

Parameter Description

Parameter	Description
key-id	Global trusted key ID, ranging from 1 to 4294967295.

Defaults N/A

Command mode Global configuration mode.

Usage Guide The NTP communication parties must use the same trusted key. The key is identified by ID and is not transmitted to improve security.

Configuration Examples The following example configures an authentication key and sets it as a trusted key.

```
Ruijie(config)#ntp authentication-key 6 md5 wooooop
Ruijie(config)#ntp trusted-key 6
Ruijie(config)#ntp server 192.168.210.222 key 6
```

Related Commands

Command	Description
ntp authenticate	Enables NTP authentication.
ntp authentication-key	Configures an NTP authentication key.
ntp server	Configures an NTP server.

Platform Description N/A

3.10 ntp update-calendar

Use this command to enable the NTP client to periodically update the device clock with the time synchronized from the external source clock. Use the **no** form of this command to remove this function.

ntp update-calendar

no ntp update-calendar

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, update the calendar periodically is not configured.

Command mode Global configuration mode.

Usage Guide By default, the NTP update-calendar is not configured. After configuration, the NTP client updates the calendar at the same time when the time synchronization of external time source is successful. It is recommended to enable this function for keeping the accurate calendar.

Configuration Examples The following example configures the NTP update calendar periodically.

```
Ruijie(config)# ntp update-calendar
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.11 show ntp server

Use this command to display the NTP server configuration.

show ntp server

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command mode Privileged EXEC mode, global configuration mode, interface configuration mode, VLAN configuration mode

Usage Guide N/A

Configuration Examples The following example displays the NTP server.

```
Ruijie# show ntp server
ntp-server                              source    keyid       prefer  version
--------------------------------------  --------  ----------  ------
-------
10::2                                  None      None        FALSE   3
192.168.210.222                          None      None        FALSE   3
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

3.12 show ntp status

Use this command to display the NTP configuration.

show ntp status

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command mode Privileged EXEC mode, global configuration mode, interface configuration mode, VLAN configuration mode

Usage Guide Use this command to display the NTP configuration. No configuration is displayed before the synchronization server is configured for the first time.

Configuration Examples The following example displays the NTP configuration.

```
Ruijie# show ntp status
Clock is synchronized, stratum 8, reference is 127.127.1.1
```

```
nominal freq is 250.0000 Hz, actual freq is 250.0000 Hz, precision is 2**24
reference time is D4BD819B.433892EE (01:27:55.000 UTC )
clock offset is 0.00000 sec, root delay is 0.00000 sec
root dispersion is 0.00002 msec, peer dispersion is 0.00002 msec
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

4 SNTP Commands

4.1 sntp enable

Use this command to enable the SNTP function. Use the **no** form of this command to restore the default value.

sntp enable

no sntp enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults SNTP is disabled by default.

Command mode Global configuration mode.

Usage Guide N/A

Configuration Examples The following example enables SNTP.

```
Ruijie(config)# sntp enable
```

Related Commands

Command	Description
show sntp	Displays the SNTP configuration.

Platform Description N/A

4.2 sntp interval

Use this command to set the interval for the SNTP client to synchronize its clock with the NTP/SNTP server. Use the **no** form of this command to restore the default synchronization interval.

sntp interval *seconds*

no sntp interval

Parameter Description

Parameter	Description
seconds	Synchronization interval. The unit is second, and the range is from 60 to 65,535.

Defaults The default synchronization interval is 1,800 seconds.

Command mode Global configuration mode.

Usage Guide To make the synchronization interval configuration effective, run the **sntp enable** command.

Configuration Examples The following example configures the synchronization interval to 3,600 seconds.

```
Ruijie(config)# sntp interval 3600
```

Related Commands

Command	Description
sntp enable	Enables SNTP.
show sntp	Displays the SNTP configuration.

Platform Description N/A

4.3 sntp server

Use this command to specify an SNTP server. Use the **no** form of this command to remove the SNTP/NTP server.

sntp server [**oob**] *ip-address* [**via** *mgmt-name*]

no sntp server

Parameter Description

Parameter	Description
ip-address	IP address of the SNTP server.
oob	(Optional) Accesses the SNTP server from the MGMT interface.
mgmt-name	(Optional) Specifies the egress MGMT interface for the packets in oob mode.

Defaults No SNTP server is configured by default.

Command mode Global configuration mode.

Usage Guide As SNTP is fully compatible with NTP, the SNTP server can be used as an NTP server in Internet.

Configuration Examples The following example specifies an SNTP server in Internet.

```
Ruijie(config)# sntp server 192.168.4.12
```

Related Commands

Command	Description
show sntp	Displays the SNTP configuration.

sntp enable	Enables SNTP.

Platform Description N/A

4.4 show sntp

Use this command to display the SNTP configuration.

show sntp

Parameter Description

Parameter	Description
N/A	N/A

Defaults

Command mode Privileged EXEC mode, global configuration mode, interface configuration mode.

Usage Guide N/A

Configuration Examples The following example displays the SNTP configuration.

```
Ruijie# show  sntp
SNTP state          : Enable
SNTP server         : 192.168.4.12
SNTP sync interval   : 60
Time zone            : +8
```

Related Commands

Command	Description
sntp enable	Enables SNTP.

Platform Description N/A

5 SPAN-RSPAN Commands

5.1 mac-loopback

Use this command to enable MAC loopback. Use the **no** form of this command to disable MAC loopback.

mac-loopback [remove-itag]

no mac-loopback [remove-itag]

Parameter Description

Parameter	Description
remove-itag	Removes the inner VLAN tag.

Defaults MAC loopback is disabled by default.

Command mode Interface configuration mode.

Usage Guide The MAC loopback feature must be enabled on the interfaces for purposes of local one-to-many mirroring. (Please enable the MAC loopback feature on the down interface, and do not add other configurations to the interface.)

Configuration Examples The following example configures a remote VLAN.

```
Ruijie(config)#vlan 100
Ruijie(config-vlan)#remote-span
Ruijie(config-vlan)#exit
```

The following example configures a session and specifies the mirrored port.

```
Ruijie(config)#monitor session 1 remote-source
Ruijie(config)#monitor session 1 source interface gigabitEthernet 4/1 both
```

The following example configures the mirroring port, and enables MAC loopback on the port.

```
Ruijie(config)#monitor session 1 destination remote vlan 100 interface
gigabitEthernet 4/2 switch
Ruijie(config)#interface gigabitEthernet 4/2
Ruijie(config-if-GigabitEthernet 4/2)#switchport access vlan 100
Ruijie(config-if-GigabitEthernet 4/2)#mac-loopback
```

The following example adds interfaces GigabitEthernet 4/3-4 to the remote VLAN.

```
Ruijie(config)#interface range gigabitEthernet 4/3-4
Ruijie(config-if-range)#switchport access vlan 100
```

Related Commands	Command	Description
	N/A	N/A

Platform Description N/A

5.2 monitor session

Use this command to configure the SPAN session and specify the source port (monitored port).
monitor session *session-num* **source interface** *interface-id* [**both** | **rx** | **tx**]

Use this command to configure the SPAN session mirroring only the traffic permitted by the access list
monitor session *session-num* **source interface** *interface-id* **rx acl** *acl-name*

Use this command to configure the SPAN session and specify the destination port (monitoring port).
monitor session *session-num* **destination interface** *interface-id* [**encapsulation replicate** | **switch**]

Use this command to configure the SPAN session monitoring the CPU packets.
monitor session *session-num* **source interface** *interface-id* **tx cpu**

Use this command to configure the remote SPAN session ID on the source device.
monitor session *session-num* **remote-source**

Use this command to configure the remote SPAN session ID on the destination device.
monitor session *session-num* **remote-destination**

Use this command to configure the remote SPAN session and specify the remote SPAN destination VLAN.
monitor session *session-num* **destination remote vlan** *remote-vlan-id* **interface** *interface-id* [**switch**]

Use this command to configure the SPAN session and specify the source VLAN to monitor. Note that the source VLAN should not be a remote VLAN.
monitor session *session-num* **source vlan** *vlan-id* [**rx**]

Use this command to limit the SPAN source traffic to specific VLANs.
monitor session *session-num* **filter vlan** *vlan-id-list*

Use this command to remove the specified SPAN session, or remove the source port or destination port of the specified SPAN session.
no monitor session *session-num* [**source interface** *interface-id* | **destination interface**

interface-id]

Use this command to remove the specified remote SPAN session, or remove the destination port of the remote SPAN session.
no monitor session *session-num* [**destination remote vlan** *remote-vlan-id* **interface** *interface-id*]

Use this command to remove all SPAN sessions.
no monitor session all
default monitor session all

Use this command to remove the specified remote SPAN session, or remote the destination port of the remote SPAN session.
default monitor session *session-num* { **destination remote vlan** *remote-vlan-id* **interface** *interface-id* }

Use this command to remove the specified SPAN session, or remove the source port or destination port of the SPAN session.
default monitor session *session-num* { **source interface** *interface-id* | **destination interface** *interface-id* }

Parameter Description

Parameter	Description
session_number	SPAN session number
interface-id	Interface name
acl *acl-name*	Access list name
remote-vlan-id	Remote VLAN ID
vlan-id	VLAN ID (remote VLAN excluded)
vlan-id-list	VLAN list (remote VLAN excluded)
rx	Monitors the only received traffic.
tx	Monitors the only transmitted traffic.
both	Monitors both received and transmitted traffic. This is the default.
encapsulation replicate	Specifies that the destination port replicates the source interface encapsulation method. If not selected, the default is to send packets in native form (untagged).
switch	Enables switching on the destination port. Switching function is disabled by default.
cpu	Monitors the CPU packets. This is disabled by default.

Defaults Port monitoring is disabled by default.

Command mode Global configuration mode.

Usage Guide Use this command to configure SPAN or remote SPAN, and specify the source port or destination port.

If the **both**, **rx** or **tx** is not specified for the source port, the **both** parameter is the default.

Configuring an access list for the source port indicates that only the traffic permitted by the access list is monitored.

The **switch** and **encapsulation replicate** features are disabled on the destination port.

CPU packet monitoring, which is enabled through the **cpu** parameter, is disabled by default.

Configuration Examples The following example configures the source port and destination port of the SPAN session.

```
Ruijie(config)# monitor session 1 source interface gigabitEthernet 0/1
Ruijie(config)# monitor session 1 destination interface gigabitEthernet 0/2
```

The following example configures the SPAN session mirroring only the traffic permitted by the access list.

```
Ruijie(config)# monitor session 3 source interface gigabitEthernet 0/3 rx acl
90
```

The following example configures a remote SPAN session.

```
Ruijie(config)# monitor session 10 remote-source
```

The following example configures the destination port of the remote SPAN session.

```
Ruijie(config)# monitor session 4 destination remote vlan 10 interface
gigabitEthernet 0/5
```

The following example configures the source VLAN of the SPAN session.

```
Ruijie(config)# monitor session 1 source vlan 1
```

The following example removes the SPAN session.

```
Ruijie(config)# no monitor session 1
```

The following example removes the source port and destination port of the SPAN session.

```
Ruijie(config)# no monitor session  1 source interface gigabitEthernet 0/18
Ruijie(config)# no monitor session  1 destination interface gigabitEthernet
0/18
```

The following example configures the SPAN session monitoring only the traffic sent from CPU.

```
Ruijie(config)# monitor session 3 source interface gigabitEthernet 0/3 tx cpu
```

The following example configures the SPAN session monitoring traffic, including the traffic sent from CPU.

```
Ruijie(config)# monitor session 3 source interface gigabitEthernet 0/3 tx cpu
Ruijie(config)# monitor session 3 source interface gigabitEthernet 0/3 tx
```

Related

Command	Description

Commands		
	N/A	N/A

Platform Description N/A

5.3 remote-span

Use this command to configure a remote SPAN VLAN in VLAN configuration mode. Use the **no** form of this command to disable the remote SPAN VLAN.

remote-span

no remote-span

Parameter Description	Parameter	Description
	N/A	N/A

Defaults Remote SPAN VLAN is disabled by default.

Command mode VLAN configuration mode.

Usage Guide N/A

Configuration Examples The following example configures a remote SPAN VLAN.

```
Ruijie(config)# vlan 100
Ruijie(config-vlan)# remote-span
```

Related Commands	Command	Description
	show vlan	Displays VLAN configuration.

Platform Description N/A

5.4 show monitor

Use this command to display the SPAN configurations.

show monitor [**session** *session_number*]

Parameter Description	Parameter	Description

session_number	Displays the specified SPAN session.

Defaults N/A

Command mode Privileged EXEC mode, global configuration mode and interface configuration mode

Usage Guide N/A

Configuration Examples This following example displays all SPAN sessions.

```
Ruijie(config)# show monitor
sess-num: 2
span-type: LOCAL_SPAN
src-intf:
TenGigabitEthernet 0/5     frame-type Both
dest-intf:
TenGigabitEthernet 0/6
sess-num: 1
span-type: LOCAL_SPAN
src-intf:
TenGigabitEthernet 0/3     frame-type Both
dest-intf:
```

The following example displays SPAN session 1.

```
Ruijie(config)# show monitor session 1
sess-num: 1
span-type: LOCAL_SPAN
src-intf:
TenGigabitEthernet 0/3     frame-type Both
dest-intf:
TenGigabitEthernet 0/4
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

6 ERSPAN Commands

6.1 capture-mode

Use this command to Configures the capture mode for mirroring the original packet. Use the **no** form of this command to restore the default capture mode.

capture-mode [**all | truncate**]

no capture-mode [**all | truncate**]

Parameter Description

Parameter	Description
all	Indicates that the entire original packet is mirrored
truncate	Indicates that the header byte of the original packet is mirrored. A specific number of header bytes to be mirrored is determined by the product chip.

Defaults The default capture mode is **all**.

Command mode ERSPAN configuration mode

Usage Guide To return to privileged EXEC mode, enter the **end** command or the **Ctrl-C** key combination.
To return to global configuration mode, enter the **exit** command.

Configuration Examples The following example configures the capture mode to **truncate**.

```
Ruijie(config)# monitor session 2 erspan-source
Ruijie(config-mon-erspan-src)#capture-mode truncate
```

Related Commands

Command	Description
show monitor	Displays the mirror sessions.

Platform Description N/A

6.2 destination ip address

Use this command to configure the destination IP address for GRE encapsulation. Use the **no** form of this command to delete the destination IP address.

destination ip address *ip_address*

no destination ip address

Parameter Description

Parameter	Description
ip_address	The destination IP address of GRE encapsulation.

Defaults N/A

Command mode ERSPAN configuration mode

Usage Guide To return to privileged EXEC mode, enter the **end** command or the **Ctrl-C** key combination.
To return to global configuration mode, enter the **exit** command.

Configuration Examples The following example configures the destination IP address.

```
Ruijie(config)# monitor session 2 erspan-source
Ruijie(config-mon-erspan-src)#destination ip address 10.1.1.2
```

Related Commands

Command	Description
show monitor	Displays the mirror sessions.

Platform Description N/A

6.3 ip dscp

Use this command to configure the DSCP value of the IP packets. Use the **no** form of this command to restore the default setting.
ip dscp *dscp-value*
no ip dscp

Parameter Description

Parameter	Description
dscp-value	The DSCP value of the IP packets. The value ranges from 0 to 64.

Defaults The default DSCP value is 0.

Command mode ERSPAN configuration mode

Usage Guide To return to privileged EXEC mode, enter the **end** command or use the **Ctrl-C** key combination.
To return to global configuration mode, enter the **exit** command.

Configuration Examples The following example configures the DSCP value of the IP packets.

```
Ruijie(config)# monitor session 2 erspan-source
```

```
Ruijie(config-mon-erspan-src)#ip dscp 56
```

Related Commands

Command	Description
show monitor	Displays the mirror sessions.

Platform Description N/A

6.4 ip ttl

Use this command to configure the TTL value of the IP packets. Use the **no** form of this command to restore the default setting.

ip ttl *ttl-value*

no ip ttl

Parameter Description

Parameter	Description
ttl-value	The TTL value of the IP packets. The value ranges from 1 to 255.

Defaults The default TTL value is 64.

Command mode ERSPAN configuration mode

Usage Guide To return to privileged EXEC mode, enter the **end** command or use the **Ctrl-C** key combination.
To return to global configuration mode, enter the **exit** command.

Configuration Examples The following example configures the TTL value of IP packets.

```
Ruijie(config)# monitor session 2 erspan-source
Ruijie(config-mon-erspan-src)#ip ttl 65
```

Related Commands

Command	Description
show monitor	Displays the mirror sessions.

Platform Description N/A

6.5 monitor session

Use this command to create an ERSPAN session. Use the **no** form of this command to delete the

session.

monitor session *session_num* { **erspan-source** }

no monitor session *session_num*

Parameter Description

Parameter	Description
session-num	Session ID

Defaults N/A

Command mode Global configuration mode

Usage Guide To return to privileged EXEC mode, enter the **end** command or the **Ctrl-C** key combination.
To return to global configuration mode, enter the **exit** command.

Configuration Examples The following example creates an ERSPAN session.

```
Ruijie(config)# monitor session 2 erspan-source
```

Related Commands

Command	Description
show monitor	Displays the mirror session information.

Platform Description N/A

6.6 origin ip address

Use this command to configure the source IP address for GRE encapsulation. Use the **no** form of this command to delete the source IP address.

origin ip address *ip_address*

no origin ip address

Parameter Description

Parameter	Description
ip_address	The source IP address of GRE encapsulation.

Defaults N/A

Command mode ERSPAN configuration mode

Usage Guide To return to privileged EXEC mode, enter the **end** command or use the **Ctrl-C** key combination.
To return to global configuration mode, enter the **exit** command.

Configuration Examples The following example configures the source IP address.

```
Ruijie(config)# monitor session 2 erspan-source
Ruijie(config-mon-erspan-src)#origin ip address 11.1.1.2
```

Related Commands

Command	Description
show monitor	Displays the mirror sessions.

Platform Description N/A

6.7 sampling-rate

Use this command to Configures the sampling frequency for mirroring. Use the **no** form of this command to restore the default value.

sampling-rate *rate*

no sampling-rate

Parameter Description

Parameter	Description
rate	Indicates the sampling frequency value, ranging from 1 to 1000000. For example, if the sampling frequency is 100, one packet is sampled from 100 packets, that is, the sampling ratio is 100:1.

Defaults The default sampling frequency is 1:1, that is, each packet is sampled.

Command mode ERSPAN configuration mode

Usage Guide This function is valid only when the sampling frequency is configured on the SPAN source port.
To return to privileged EXEC mode, enter the **end** command or use the **Ctrl-C** key combination.
To return to global configuration mode, enter the **exit** command.

Configuration Examples The following example configures the sampling frequency to 1000.

```
Ruijie(config)# monitor session 2 erspan-source
Ruijie(config-mon-erspan-src)#sampling-rate 1000
```

Related Commands

Command	Description
show monitor	Displays the mirror sessions.

Platform Description N/A

6.8 shutdown

Use this command to shut down the session. Use the **no** form of this command to restore the default setting.
Shutdown
no shutdown

Parameter Description

Parameter	Description
N/A	N/A

Defaults The ERSPAN session is enabled by default.

Command mode ERSPAN configuration mode

Usage Guide To return to privileged EXEC mode, enter the **end** command or the **Ctrl-C** key combination.
To return to global configuration mode, enter the **exit** command.

Configuration Examples The following example shuts down ERSPAN session 2.

```
Ruijie(config)# monitor session 2 erspan-source
Ruijie(config-mon-erspan-src)#shutdown
```

Related Commands

Command	Description
show monitor	Displays the mirror sessions.

Platform Description N/A

6.9 source interface

Use this command to configure the ERSPAN source interface. Use the **no** form of this command to delete this source interface.
source interface [*single-interface* **| all**] [**rx | tx | both**]
no source interface [*single-interface* **| all**] [**rx | tx | both**]

Use this command to configure the flow-based ERSPAN source interface and enable sampling. Use the **no** form of this command to delete this source interface.
source interface *single-interface* **rx acl** *acl-name* [**sample**]

no source interface *single-interface* **rx acl** *acl-name*

Parameter Description

Parameter	Description
single-interface	Source interface of the mirror.
all	Indicates global interfaces that support mirroring.
rx	Receives only the traffic of Rx direction.
tx	Receives only the traffic of Tx direction.
both	(Default) Receives the traffic of Tx and Rx directions.
acl *acl-name*	ACL name.
sample	Indicates whether the sampling is enabled.

Defaults N/A

Command mode ERSPAN configuration mode

Usage Guide To return to privileged EXEC mode, enter the **end** command or use the **Ctrl-C** key combination.
To return to global configuration mode, enter the **exit** command.

Configuration Examples The following example configures an ERSPAN source interface.

```
Ruijie(config)# monitor session 2 erspan-source
Ruijie(config-mon-erspan-src)#source interface gigabitethernet 0/1 both
```

The following example configures a flow-based ERSPAN source interface and enables sampling.

```
Ruijie(config)# monitor session 2 erspan-source
ruijie(config-mon-erspan-src)#source interface gigabitEthernet 0/3 rx acl 90
sample
```

Related Commands

Command	Description
show monitor	Displays the mirror sessions.

Platform Description N/A

6.10 vrf

Use this command to configure VRF. Use the **no** form of this command to restore the default setting.
vrf *vrf-name*
no vrf

Parameter

Parameter	Description

Description

vrf-name	VRF name

Defaults VRF name is null by default.

Command mode ERSPAN configuration mode

Usage Guide To return to privileged EXEC mode, enter the **end** command or use the **Ctrl-C** key combination.
To return to global configuration mode, enter the **exit** command.

Configuration Examples The following example configures the VRF name.

```
Ruijie(config)# monitor session 2 erspan-source
Ruijie(config-mon-erspan-src)# vrf vrf-name
```

Related Commands

Command	Description
show monitor	Displays the mirror sessions.

Platform Description N/A

7 sFlow Commands

7.1 sflow agent

Use this command to configure the address of the sFlow Agent.
sflow agent { **address** { *ip-address* **| ipv6** *ipv6-address* }} | { **interface** { *interface-name* | **ipv6** *interface-name* }}

Use this command to delete the address of the sFlow Agent.
no sflow agent { address | interface }

Use this command to restore the default setting.
default sflow agent { address | interface }

Parameter Description

Parameter	Description
address	Configures the IP address of the sFlow Agent.
ip-address	sFlow Agent IPv4 address.
ipv6 *ipv6-address*	sFlow Agent IPv6 address.
interface	Configures the interface of the sFlow Agent.
interface-name	Interface of IPv4 address.
ipv6 *interface-name*	Interface of IPv6 address.

Defaults No sFlow Agent address is configured by default.

Command Mode Global configuration mode

Default Level 14

Usage Guide This command is used to configure the Agent IP address field in the output sFlow datagram. The datagram not configured with this filed cannot be output. The sFlow Agent address shall be a host address. When a non-host address (for example, a multicast or broadcast address) is configured as the sFlow Agent address, a message indicating configuration failure is displayed. It is recommended that the IP address of the sFlow Agent device be configured as the sFlow Agent address.

Configuration Examples The following example configures 192.168.2.1 as the sFlow Agent address.

```
Ruijie(config)# sflow agent address 192.168.2.1
```

Verification Use the **show sflow** command to display the sFlow configuration.

Prompt Prompt an error message when the address is invalid.

Messages `invalid host address.`

Common Errors N/A

Platforms N/A

7.2 sflow collector *collector-id* destination

Use this command to configure the address of the sFlow Collector.
sflow collector *collector-id* **destination** { *ip-address* | **ipv6** *ipv6_address* } *udp-port* **[[vrf** *vrf-name* **] | [oob [via mgmt** *mgmt-name* **]]] | [description** *collector-name* **]**

Use this command to delete the address of the sFlow Collector.
no sflow collector *collector-id* **destination** { *ip-address* | **ipv6** *ipv6_address* } *udp-port* **[[vrf** *vrf-name* **] | [oob [via mgmt** *mgmt-name* **]]] | [description** *collector-name* **]**

Use this command to delete the address of the sFlow Collector.
default sflow collector *collector-id* **destination** { *ip-address* | **ipv6** *ipv6_address* } *udp-port* **[[vrf** *vrf-name* **] | [oob [via mgmt** *mgmt-name* **]]] | [description** *collector-name* **]**

Parameter Description

Parameter	Description
collector-id	sFlow Collector ID. The range is from 1 to 2.
ip-address	sFlow Collector IPv4 address
ipv6 *ipv6-address*	sFlow Collector IPv6 address
udp-port	sFlow Collector listening port number
vrf *vrf-name*	VRF instance name. It is not configured by default.
oob	The sampled traffics are output through the management interface. By default, this parameter is not configured.
via mgmt *mgmt-name*	The management interface which the sampled traffics are output through. By default, this parameter is not configured.
description *collector-name*	Description of the sFlow Collector.

Defaults No sFlow Collector address is configured by default.

Command Mode Global configuration mode

Default Level 14

Usage Guide This command is used to configure the sFlow Collector address. The sFlow Collector address shall be a host address. When a non-host address (for example, a multicast or broadcast address) is configured as the sFlow Collector address, a message indicating configuration failure is displayed. The sFlow

Collector monitors the sFlow datagram on the specified port. When the vrf parameter is configured, the corresponding VRF instance must exist. When you remove a VRF instance, the sFlow Collector address will be removed if this VRF instance is also configured for an sFlow Collector address. When the oob parameter is configured, a datagram is sent to the sFlow Collector through the management interface.

Configuration Examples The following example configures 192.168.1.100 as the address of sFlow Collector 1, 6343 as the port number and vrf 1 as the VRF instance.

```
Ruijie(config)# sflow collector 1 destination 192.168.2.100 6343 vrf vrf1
```

Verification Use the **show sflow** command to display the sFlow Collector.

Prompt Messages Prompt an error message when the address is invalid.

```
invalid host address.
```

No VPN exists.

```
vpn is not exist
```

Common Errors N/A

Platforms N/A

7.3 sflow collector *collector-id* max-datagram-size

Use this command to configure the maximum length of the output sFlow datagram.
sflow collector *collector-id* **max-datagram-size** *datagram-size*

Use this command to restore the default maximum length of the output sFlow datagram.
no sflow collector *collector-id* **max-datagram-size**

Use this command to restore the default maximum length of the output sFlow datagram.
default sflow collector *collector-id* **max-datagram-size**

Parameter Description

Parameter	Description
collector-id	sFlow Collector ID. The range is from 1 to 2.
max-datagram-size *datagram-size*	The maximum length of the output sFlow datagram. The range is from 200 to 9,000.

Defaults The default maximum length of the output sFlow datagram is 1,400.

Command Mode Global configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example configures 1,000 as the maximum length of the output sFlow datagram for sFlow Collector.

```
Ruijie(config)# sflow collector 1 max-datagram-size 1000
```

Verification Use the **show sflow** command to display the maximum length of the output sFlow datagram.

Prompt Messages N/A

Common Errors N/A

Platforms N/A

7.4 sflow counter collector

Use this command to enable the sFlow Agent to send counter samples to the sFlow Collector.
sflow counter collector *collector-id*

Use this command to disable the sFlow Agent to send counter samples to the sFlow Collector.
no sflow counter collector

Use this command to disable the sFlow Agent to send counter samples to the sFlow Collector.
default sflow counter collector

Parameter Description

Parameter	Description
collector-id	sFlow Collector ID. The range is from 1 to 2.

Defaults Sending counter samples to the sFlow Collector is disabled by default.

Command Mode Interface configuration mode

Default Level 14

Usage Guide This command can be used for physical ports, SVI ports and sub routed ports and aggregate ports. sFlow datagrams can be output only when an IP address is configured for the corresponding sFlow Collector.

Configuration Examples The following example enables interface TenGigabitEthernet 0/5 to send counter samples to sFlow Collector 2.

```
Ruijie(config-if-TenGigabitEthernet 0/5)# sflow counter collector 2
```

Verification Use the **show sflow** command to display the sFlow counter sampling configuration.

Prompt Messages N/A

Common Errors N/A

Platforms N/A

7.5 sflow counter interval

Use this command to configure the sFlow counter sampling interval.
sflow counter interval *seconds*

Use this command to restore the default sFlow counter sampling interval.
no sflow counter interval

Use this command to restore the default sFlow counter sampling interval.
default sflow counter interval

Parameter Description

Parameter	Description
seconds	sFlow counter sampling interval. The range is form 3 to 2,147,483,647. The unit is second.

Defaults The default sFLow counter sampling interval is 30 seconds.

Command Mode Global configuration mode

Default Level 14

Usage Guide This command is used to configure the global sFlow counter sampling interval, and sFlow Counter sampling of all interfaces uses this sampling interval.

Configuration Examples The following example configures the sFlow counter sampling interval to 60 seconds.

```
Ruijie(config)# sflow counter interval 60
```

Verification Use the **show sflow** command to display the sFlow counter sampling interval.

Prompt Messages N/A

Common Errors N/A

Platforms N/A

7.6 sflow flow collector

Use this command to enable the sFlow Agent to send flow samples to the sFlow Collector.
sflow flow collector *collector-id*

Use this command to disable the sFlow Agent to send flow samples to the sFlow Collector.
no sflow flow collector

Use this command to disable the sFlow Agent to send flow samples to the sFlow Collector.
default sflow flow collector

Parameter Description

Parameter	Description
collector-id	sFlow Collector ID. The range is from 1 to 2.

Defaults Sending the flow samples to the sFlow Collector is disabled by default.

Command Mode Interface configuration mode

Default Level 14

Usage Guide This command can be used for physical ports, SVI ports, sub routed ports and aggregate ports. sFlow datagrams can be output only when an IP address is configured for the corresponding sFlow Collector.

Configuration Examples The following example enables interface TenGigabitEthernet 0/5 to send flow samples to sFlow Collector 2.

```
Ruijie(config-if-TenGigabitEthernet 0/5)# sflow flow collector 2
```

Verification Use the **show sflow** command to display the sFlow flow sampling configuration.

Prompt Messages N/A

Common Errors	N/A
Platforms	N/A

7.7 sflow flow max-header

Use this command to configure the maximum length of the packet header copied during flow sampling.
sflow flow max-header *length*

Use this command to restore the default maximum length of the packet header copied during flow sampling.
no sflow flow max-header

Use this command to restore the default maximum length of the packet header copied during flow sampling.
default sflow flow max-header

Parameter Description

Parameter	Description
length	Maximum length of the packet header to be copied. The range is from 18 to 256. The unit is byte.

Defaults	The default length is 64 bytes.
Command Mode	Global configuration mode
Default Level	14
Usage Guide	Configure the maximum number of bytes of the packet content copied from the header of the original packet. The copied content is recorded in the generated sample.
Configuration Examples	The following example sets the maximum length of the packet header copied during sFlow flow sampling to 128 bytes. `Ruijie(config)# sflow flow max-header 128`
Verification	Use the **show sflow** command to display the maximum length of the packet header copied during sFlow flow sampling.
Prompt Messages	N/A

Common Errors	N/A
Platforms	N/A

7.8 sflow sampling-rate

Use this command to configure the sampling rate of sFlow flow sampling.
sflow sampling-rate *rate*

Use this command to restore the default the sampling rate of sFlow flow sampling.
no sflow sampling-rate

Use this command to restore the default sampling rate of sFlow flow sampling.
default sflow sampling-rate

Parameter Description

Parameter	Description
rate	Sampling rate of sFlow sampling. One packet is sampled from every *n* packets (*n* equals the value of rate). The range is from 4,096 to16,777,215.

Defaults	The default sFlow flow sampling rate is 8,192.
Command Mode	Global configuration mode
Default Level	14
Usage Guide	This command is used to configure the global sampling rate of sFlow flow sampling, and sFlow flow sampling of all interfaces uses this sampling rate.
Configuration Examples	The following example sets the sFlow flow sampling rate to 4,096. `Ruijie(config)# sflow sampling-rate 4096`
Verification	Use the **show sflow** command to display the sFlow flow sampling rate.
Prompt Messages	N/A
Common Errors	N/A
Platforms	N/A

7.9 sflow source

Use this command to configure the source address of the output packets.
sflow source { address {*ip-address* **| ipv6** *ipv6-address* }} | { **interface** { *interface-name* | **ipv6** *interface-name* }}

Use this command to remove the source address of the output packets.
no sflow source { address | interface }

Use this command to restore the default source address of the output packets.
default sflow source { address | interface }

Parameter Description

Parameter	Description
address	Configures the source IP address of sFlow output packets
ip-address	sFlow Source IPv4 address
ipv6 *ipv6-address*	sFlow Source IPv6 address
interface	Configures the source interface of sFlow output packets
interface-name	sFlow Source interface (configured with an IPv4 address)
ipv6 *interface-name*	sFlow Source interface (configured with an IPv6 address)

Defaults The default sFlow Source address is the local device IP address which is used to ping the destination IP

Command Mode Global configuration mode

Default Level 14

Usage Guide This command is used to configure the source IP address of the output packets. If a source interface is specified, the primary address of the interface will be the source IP address of the outputs packets. If the source interface is not specified, for example, the interface is shutdown, the default source address will be used.

Configuration Examples The following example configures the source address of the sFlow output packets as 192.168.2.1.

```
Ruijie(config)# sflow source address 192.168.2.1
```

Verification Use the **show sflow** command to display the status of the sFlow sampling function.

Prompt Messages N/A

Common Errors N/A

Platforms N/A

7.10 sflow enable

Use this command to enable flow sampling and counter sampling on the interface.
sflow enable [ingress [acl *id* | *name* **] | egress]**

Use this command to disable flow sampling and counter sampling on the interface.
no sflow enable

Use this command to disable flow sampling and counter sampling on the interface.
default sflow enable

Parameter Description

Parameter	Description
ingress	Enables sFlow sampling in ingress direction.
egress	Enables sFlow sampling in egress direction.
id	ACL number.
name	ACL name.

Defaults The sFlow sampling function on an interface is disabled by default.

Command Mode Interface configuration mode

Default Level 14

Usage Guide This command can be used to enable counter sampling and flow sampling for physical ports, SVI ports, sub routed ports and aggregate ports. sFlow datagram can be output only when an IP address is configured for the corresponding sFlow Collector.
If the direction parameter is not specified, sampling on both directions are enabled.
The SVI ports and sub routed ports support only the **ingress** parameter.
The ACL should be configured and applied on the interface before the flow sampling based on ACL matching is enabled.
Up to two commands for ingress ACL-based flow sampling are supported on an interface.

Configuration Examples The following example enables the sFlow sampling on interface TFGigabitEthernet 0/5 and enables ACL-based sFlow sampling on interface TFGigabitEthernet 0/3.

```
Ruijie(config-if-TenGigabitEthernet 0/5)# sflow enable
Ruijie(config-if-TFGigabitEthernet 0/5)# exit
Ruijie(config)#ip access-list extended test_v4
Ruijie(config-ext-nacl)#permit tcp any any
Ruijie(config-ext-nacl)# exit
Ruijie(config)#interface tfGigabitEthernet 0/3
```

```
Ruijie(config-if-TFGigabitEthernet 0/3)#sflow enable ingress acl test_v6
Ruijie(config-if-TFGigabitEthernet 0/3)#sflow enable ingress acl test_v4
Ruijie(config-if-TFGigabitEthernet 0/3)#show this
Building configuration...
!
 no switchport
 sflow enable ingress acl test_v6
 sflow enable ingress acl test_v4
!
end
Ruijie(config-if-TFGigabitEthernet 0/3)#
```

Verification Use the **show sflow** command to display the status of the sFlow sampling function.

Prompt Messages N/A

Common Errors N/A

Platforms N/A

7.11 show sflow

Use this command to display the sFlow configuration.

show sflow

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode/global configuration mode/interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays the sFlow configuration.

```
Ruijie# show sflow
sFlow datagram version 5
Global information:
Agent IP: 10.10.10.10
sflow counter interval:10
```

```
sflow flow max-header:128
sflow sampling-rate:4096
Collector information:
ID   IP                      Port Size VRF
1    192.168.2.100             6343 1400
2    NULL                    0    1400
Port information
Interface                   CID  FID  Enable
TenGigabitEthernet 0/1        0    1    B
TenGigabitEthernet 0/2        0    1    I
TenGigabitEthernet 0/3        0    1    E
```

Field Description:

Field	Description
sFlow datagram version	sFlow datagram version. Currently, Ruijie supports V5 only.
Agent IP	IP address of the sFlow Agent. It can be configured by using the sflow Agent address {*ip-address* | ipv6 *ipv6-address* } command.
sflow counter interval	Counter sampling interval
sflow flow max-header	The maximum length of bytes of the packet header to be copied
sflow sampling-rate	Flow sampling rate
ID	sFlow Collector ID
IP	The IP address of the sFlow Colletor to receive sFlow datagram
Port	Port No. of the sFlow Collector to receive sFlow datagram
Size	The maximum length of the output sFlow datagram
VRF	VRF instance name of sFlow Collector
Interface	An interface configured with sFlow function
CID	The destination sFlow Collector ID to which the sFlow Agent sends the counter samples.
FID	The destination sFlow Collector ID to which the sFlow Agent sends the flow samples.
Enable	The status of the sFlow sampling function

Prompt Messages N/A

Platforms N/A

7.12 show sflow stats

Use this command to display the statistics of sFlow packets. (This command is provided for debugging.)

show sflow stats

Parameter Description

Parameter	Description

N/A	N/A

Command Mode Privileged EXEC mode/global configuration mode/interface configuration mode

Default Level 14

Usage Guide This command is provided for debugging. The outputs of this command are for expert's analysis. The **sflow export packet num** field, which indicates the output packet count, is provided for simple query.

Configuration Examples The following example displays sFlow statistics.

```
Ruijie#show sflow stats
sflow drop flow num:0
sflow drop invalid flow num:0
sflow receive flow num:0
sflow drop counter num:0
sflow receive counter num:0
sflow malloc fail num:0
sflow get counter fail num:0
sflow export packet num:0
sflow export fail num:0
sflow export flow num:0
sflow export counter num:0
sflow export sampler fail num:0
sflow current msg list len:0
```

Field Description:

Field	Description
sflow drop flow num	The number of sFlow samples dropped by the sFlow agent.
sflow drop invalid flow num	The number of invalid sFlow samples dropped by the sFlow agent.
sflow receive flow num	The number of sFlow samples received by the sFlow agent.
sflow drop counter num	The number of counter samples dropped by the sFlow agent.
sflow receive counter num	The number of counter samples received by the sFlow agent.
sflow malloc fail num	The number of failures about memory application.
sflow get counter fail num	The number of failed counter samples obtained by the sFlow agent.
sflow export packet num	The number of packets output by the sFlow agent.
sflow export fail num	The number of failed packets output by the sFlow agent.
sflow export flow num	The number of sFlow samples output by the sFlow agent.
sflow export counter num	The number of counter samples output by the sFlow agent.
sflow export sampler fail num	The number of failed samples, including the counter samples and sFlow samples.

sflow current msg list len	The length of the message queue of the sFlow agent.

Prompt Messages N/A

Platforms N/A

8 IPFIX Commands

8.1 clear { ip | ipv6 } flow stats

Use this command to clear flow table information.

clear { ip | ipv6 } flow stats

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide This command is used to clear flow table information, and then all entries will be aged.

Configuration Examples The following example clears IP information.

```
Ruijie# clear ip flow stats
```

The following example clears IPv6 information.

```
Ruijie# clear ipv6 flow stats
```

Prompt Message N/A

Platform Description N/A

8.2 [ipv6] flow-sampler

Use this command to configure the sampling rate for an interface.

[ipv6] flow-sampler *sampler-map-name* **[acl { id | name } | egress]**

Parameter

Parameter	Description

Description

ipv6	Configures the IPv6 packet sampling rate. By default, the sampling rate is valid to IPv4 packets if no protocol type is specified.
sampler-map-name	Indicates the name of a sampling rate rule applied to an interface.
egress	Indicates the outbound direction. The configuration takes effect on the inbound direction if no direction is specified.
id	Indicates the ACL ID.
name	Indicates the ACL name.

Defaults No sampling rate rule is applied to an interface by default.

Command Mode Interface configuration mode

Default Level 14

Usage Guide

1. A sampling rate rule needs to be configured before a sampling rate is configured for an interface.

2. This command cannot be used together with the **ip flow ingress** and **ip flow egress** commands. If they are configured together, the **flow-sampler** [**egress**] command has a higher priority than the **ip flow** { **ingress** | **egress** } command.

3. This command can be configured only on physical ports and Aggregate Ports (APs).

4. An ACL is applied only to inbound sampling by default. That is, if an ACL is configured or **egress** is not specified, the configured sampling rate rule is applied to inbound sampling. Configure an ACL before applying a sampling rate rule. After the ACL is applied to an interface, sampling is conducted on packets matching the ACL.

Configuration Examples The following example configures the sampling rate for port 2/2.

```
Ruijie# config terminal
Ruijie(config)# flow-sampler-map my_sampler
Ruijie(config-sampler)# mode random one-out-of 666
Ruijie(config-sampler)# exit
Ruijie(config)# interface gi 2/2
Ruijie(config-if)# flow-sampler my_sampler
Ruijie(config-if)# exit
```

Verification Run the **show ip flow interface** command to check whether the configuration is successful.

Prompt Message 1. The sampling function fails to be enabled on an interface.

```
Enable flow sampler failure.
```

2. The sampling rate rule does not exist.

```
sampler not exist.
```

8.3 flow-sampler-map

Use this command to enter the sampling rate rule configuration mode. Use the **no** form of this command to delete the sampling rate rule configuration mode.

flow-sampler-map *sampler-map-name*

no flow-sampler-map *sampler-map-name*

Parameter Description

Parameter	Description
sampler-map-name	Indicates the name of a sampling rate rule.

Defaults No sampling rate rule is configured by default.

Command Mode Global configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example configures a sampling rate rule.

```
Ruijie# config terminal
Ruijie(config)# flow-sampler-map my_sampler
Ruijie(config-sampler)# mode random one-out-of 666
Ruijie(config-sampler)# exit
```

Verification Run the **show flow-sampler** command to check whether the configuration is successful.

8.4 { ip | ipv6 } flow egress

Use this command to enable IPFIX sampling on outbound packets on an interface. Use the **no** form of this command to restore the default settings.

{ **ip** | **ipv6** } **flow egress**

no { **ip** | **ipv6** } **flow egress**

Parameter Description

Parameter	Description
N/A	N/A

Defaults IPFIX sampling on outbound packets of an interface is disabled by default.

Command Mode Interface configuration mode

Default Level 14

Usage Guide

1. This command is used to enable the IPFIX flow statistics function on an interface of the switch. The IPFIX function can be enabled globally only after the { **ip** | **ipv6** } **flow egress** or { **ip** | **ipv6** }

flow ingress command is configured on at least one interface.

2. This command can be configured only on physical ports and APs.

Configuration Examples The following example enables the IP flow statistics function in the outbound direction of port 0/1.

```
Ruijie(config)# interface gigabitEthernet  0/1
Ruijie(config-if)# ip flow egress
Ruijie(config-if)# exit
```

Verification Run the **show ip flow interface** command to check whether the configuration is successful.

Prompt Message The sampling fails to be enabled in the outbound direction.

```
Enable flow egress failure.
```

8.5 { ip | ipv6 } flow ingress

Use this command to enable IPFIX sampling on inbound packets on an interface. Use the **no** form of this command to restore the default settings.

{ **ip** | **ipv6** } **flow ingress**

no { **ip** | **ipv6** } **flow ingress**

Parameter Description

Parameter	Description
N/A	N/A

Defaults IPFIX sampling on inbound packets of an interface is disabled by default.

Command Mode Interface configuration mode

Default Level 14

Usage Guide

1. This command is used to enable the IPFIX flow statistics function on an interface of the switch.

The IPFIX function can be enabled globally only after the { **ip** | **ipv6** } **flow egress** or { **ip** | **ipv6** } f**low ingress** command is configured on at least one interface.

2. This command can be configured only on physical ports and APs.

Configuration Examples The following example enables the IP flow statistics function in the inbound direction of port 0/1.

```
Ruijie(config)# interface gigabitEthernet  0/1
Ruijie(config-if)# ip flow ingress
Ruijie(config-if)# exit
```

Verification Run the **show ip flow interface** command to check whether the configuration is successful.

Prompt Message The sampling function fails to be enabled in the inbound direction.

```
Enable flow ingress failure.
```

8.6 { ip | ipv6 } flow-cache timeout

Use this command to set aging time for main mode flows. Use the **no** form of this command to restore the default settings.

{ **ip | ipv6** } **flow-cache timeout** { **active** *minutes* | **inactive** *seconds* }

no { **ip | ipv6** } **flow-cache timeout** { **active** | **inactive** }

Parameter Description

Parameter	Description
active *minutes*	Indicates the active aging time, in minutes, that is, the time that an active entry can exist in the main mode cache before export or deletion. The valid value range is from 1 to 60 and the default value is 30.
inactive *seconds*	Indicates the inactive aging time, in which no flow record about an entry is detected before the main mode entry is aged. The value ranges from 10 seconds to 600 seconds. The default value is 15 seconds.

Defaults The default active aging time of main mode entries is 30 minutes.

The default inactive aging time of main mode entries is 15 seconds.

Command Mode	Global configuration mode
Default Level	14
Usage Guide	This command is used to set the active and inactive aging time for record entries in the main cache. If packets belonging to a flow are continuously detected, the flow is deemed active. If no packet belonging to a flow is detected within a period of time (inactive aging time), the flow is inactive and should be aged. Flows can be aged in three ways: The aging time expires. Flow aging can be triggered by the FIN or RST flag of TCP packets. Commands can be executed to forcibly age all entries.

Configuration Examples	The following example sets the active aging time.
	`Ruijie(config)# ip flow-cache timeout active 20`
	`Or:`
	`Ruijie(config)# ipv6 flow-cache timeout active 20`
	The following example sets the inactive aging time.
	`Ruijie(config)# ip flow-cache timeout inactive 10`
	`Or:`
	`Ruijie(config)# ipv6 flow-cache timeout inactive 10`

Verification	N/A
Prompt Message	The following prompt is displayed when a configuration failure occurs: `Set ip flow cache timeout failure.`

8.7 { ip | ipv6 } flow-export

Use this command to configure the server, to which main mode flow records are to be exported. Use the **no** form of this command to restore the default settings.

{ **ip** | **ipv6** } **flow-export** { **destination** { **ipv6** *ipv6_addr* | *ip-address* | *hostname* } *udp-port* [[**vrf** *vrf-name*] | [**oob** [**via mgmt** *mgmt-name*]]] | **version** { **5 | 9** | **10** } | **source** *interface-name* | **template** { **refresh-rate** *packets* | **timeout-rate** *minutes* | **options** { **export-stats** | **refresh-rate** *packets* | **timeout-rate** *minutes* } | **model** *model-id* } | **interface-type** { **port | vlan** } }

no { **ip | ipv6** } **flow-export** { **destination** { **ipv6** *ipv6_addr* | *ip-address* | *hostname* } *udp-port* [**vrf** *vrf-name*] | **version** | **source** | **template** { { **refresh-rate** | **timeout-rate** } | **options** { **export-stats** | **refresh-rate** | **timeout-rate** } | **model** } | **interface-type** }

Parameter Description

Parameter	Description
destination { **ipv6** *ipv6_addr* | *ip-address* | *hostname* *udp-port* }	Indicates the host name or IP/IPv6 address of the server, to which main mode flow records should be sent, and the listening port number of the collector.
vrf *vrf-name*	Indicates the name of the VRF instance, to which the collector IP address belongs.
oob	Indicates that sampled packets are exported from the management port. It is not configured by default.
via mgmt *mgmt-name*	Indicates the name of the management port for exporting sampled packets. It is not configured by default.
version { **5** | **9** | **10** }	Indicates the packet export format. **version 5** indicates that packets are exported in compliance with the Netflow V5 standard, **version 9** indicates that packets are exported in compliance with the Netflow V9 standard, and **version 10** indicates that packets are exported in compliance with the IETF standard. The default value is **version 10**.
source *interface-name*	Uses the IP address of a configured interface as the source IP address for exporting packets.
template	Enables template output. If this field is configured, **refresh-rate** or **timeout-rate** or both can be configured.
refresh-rate *packets*	Specifies the template retransmission frequency, with the unit of packets. The value ranges from 1 to 600 and the default value is 20.
timeout-rate *minutes*	Specifies the template retransmission interval, with the unit of minutes. The value ranges from 1 to 3600 and the default value is 10.
options	Enables the keywords **export-stats**, **refresh-rate**, and **timeout-rate** to configure data output options.
export-stats	Enables the export of option data packets, including the number of

	exported IPFIX packets and number of exported IPFIX flow records.
refresh-rate *packets*	Sets the retransmission frequency of option data, with the unit of packets. The value ranges from 1 to 600. The default value is 20.
timeout-rate *minutes*	Sets the retransmission interval of option data, with the unit of minutes. The value ranges from 1 minute to 3600 minutes. The default value is 10 minutes.
interface-type { **port** | **vlan** }	Indicates the type of the device interface for exporting flow statistics to the IPFIX server. port Displays the physical port. vlan Displays the VLAN interface. The default interface type is **port**.
model *model-id*	Indicates the template mode ID. The value can be 0 or 1 and the default value is 0. Template mode 0 indicates that an inbound sampling template and an outbound sampling template exist. Template mode 1 indicates that the sampling direction is not differentiated and statistics in the inbound and outbound directions are recorded in the same template.

Defaults No destination address and port for exporting flow records are configured by default.

The default data template retransmission frequency is 20 packets and the default retransmission interval is 10 minutes.

No output option is enabled by default.

The default packet output format is **version 10**.

The default interface type is **port**.

Command Mode Global configuration mode

Default Level 14

Usage Guide After the IPFIX function is enabled, you can run the { **ip** | **ipv6** } **flow-export destination** command to configure the server, to which IPFIX flow records are to be exported. Generally, the flow record processing software runs on the server to process flow records exported from the device. This command supports at most two combinations of destination IP/IPv6 addresses and ports. The purpose is to export flow records to two different servers to achieve redundancy. Therefore, two

different destination IP addresses are generally configured. You can also configure the same destination IP address with different destination ports. In this case, you will receive a warning, indicating that you have configured two servers with the same IP/IPv6 addresses.

When the source interface is specified, the source address of the IPFIX packets to be exported is the main address of the interface (the IPv6 address is the first global IPv6 address of the interface).

When no source interface is specified, the source address of the IPFIX packets to be exported is the local address that best-matches the server address. The server address can be an IPv4 or IPv6 address or both. If the source interface is specified and the server address is set to an IPv6 address, ensure that an IPv6 address is configured for the source interface. If the server address is set to an IPv4 address, ensure that an IPv4 address is configured for the source interface. Otherwise, the system obtains the best-matched local address as the source address based on the server address. You must ensure that the source interface and the server, to which flow records are to be exported, belong to the same VRF instance. Otherwise, the system obtains the best-matched local address as the source address based on the server address.

The server address can be an IPv4 or IPv6 address or both. A maximum of two addresses can be configured. If the source interface is specified and the server address is set to an IPv6 address, ensure that an IPv6 address is configured for the source interface. If the server address is set to an IPv4 address, ensure that an IPv4 address is configured for the source interface. Otherwise, the system obtains the best-matched local address as the source address based on the server address.

When the flow statistics function is enabled on a physical port that is a member interface of SVI, the statistics port can be an SVI or layer-2 physical port. Users can use this command to configure the port type (physical port or SVI) to be displayed (sent to the server). If a physical port is a routing port, the physical port cannot belong to any VLAN. Therefore, the port for exporting IP packet flows to the IPFIX server is a physical port regardless of whether the **ip flow-export interface-type** command is configured.

Configuration Examples

The following example configures the destination address, to which IPFIX main mode flow records are to be exported.

```
Ruijie(config)# ip flow-export destination 10.42.42.1 9991
Ruijie(config)# ipv6 flow-export destination
```

The following example configures multiple destination addresses, to which IPFIX main mode flow records are to be exported (two addresses are supported currently).

```
Ruijie(config)# ip flow-export destination 10.42.42.1 9991
Ruijie(config)# ip flow-export destination 10.0.101.254 9991
Ruijie(config)# ipv6 flow-export destination ipv6 1111::1111 9991
```

The following example configures multiple destination addresses, to which IPFIX main mode flow records are to be exported.

```
Ruijie(config)# ip flow-export destination 10.42.42.1 9991
Ruijie(config)# ip flow-export destination 10.42.42.2 9992
```

The following example configures the retransmission rate of the main mode data template.

```
Ruijie(config)# ip flow-export template refresh-rate 100
Ruijie(config)# ip flow-export template timeout-rate 60
Ruijie(config)# ipv6 flow-export template refresh-rate 100
Ruijie(config)# ipv6 flow-export template timeout-rate 60
```

The following example configures the type of interface that exports traffic statistics to the IPFIX server.

```
Ruijie(config)# ip flow-export interface-type port
Ruijie(config)# no ip flow-export interface-type
```

Verification Run the **show** { **ip** | **ipv6** } **flow export** command to display output information.

Prompt Message The following prompt is displayed when the address and port of the server, to which flow records are to be exported, fail to be configured.

```
Set ip flow export destination failure.
```

If two servers are configured to have the same address but different port numbers, the following prompt is displayed.

```
%%Warning:Destination address is the same as previous address [ ip-address | ipv6_addr ] udp port [ udp-port ]
```

The following prompt is displayed, indicating a configuration failure when the third server address is configured.

```
%%Error:Exceeded maximum export destinations
```

The following domain name resolution prompt is displayed when a domain name is configured.

```
Translating "[ hostname ]"...
```

The domain name resolution is successful.

```
"[ hostname ]" Translated to an invalid address [ ip-address | ipv6_addr ]
```

The domain name resolution fails.

```
"[ hostname ]" Translating fail!
```

8.8 mode

Use this command to configure a random sampling rate rule.

mode random one-out-of *packet-interval*

The **no** form of this command does not exist. The random sampling rate rule configuration is deleted when the sampling rate rule configuration mode is deleted.

Parameter Description

Parameter	Description
packet-interval	Indicates that one packet is randomly sampled in consecutive **packet-interval** packets.

Defaults No random sampling rate rule is defined by default.

Command Mode IPFIX sampling rate rule configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example configures the sampling rate for port 2/2.

```
Ruijie# config terminal
Ruijie(config)# flow-sampler-map my_sampler
Ruijie(config-sampler)# mode random one-out-of 666
Ruijie(config-sampler)# exit
Ruijie(config)# interface gi 2/2
Ruijie(config-if)# flow-sampler my_sampler
Ruijie(config-if)# exit
```

Verification Run the **show flow-sampler** command to check whether the configuration is successful.

8.9 show flow-sampler

Use this command to display a random sampling rate rule and sampling statistics.

show flow-sampler [*sampler-map-name*]

Parameter Description

Parameter	Description
sampler-map-name	Indicates the name of a random sampling rate rule. If it is not specified, all random sampling rate rules will be displayed.

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide

Configuration Examples The following example displays a random sampling rate rule.

```
Ruijie# show flow-sampler my_sampler
Sampler : my_sampler, id : 1, mode : random sampling mode
sampling interval is : 666
```

Field description:

Field	Description
Sampler	Name of a random sampling rate rule
id	ID of a random sampling rate rule
mode	Random sampling rate rule. The value is **random sampling mode**.
sampling interval	Sampling interval

8.10 show { ip | ipv6 } flow cache

Use this command to display information about the main mode flow table.

show { **ip** | **ipv6** } **flow cache**

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide This command is used to display information about the main mode flow table and flow records.

Configuration Examples The following example displays the main mode flow table.

```
Ruijie# show ip fl cache
IPFIX NMM(slot-2):
       IPV4 Flow Switching Cache, 1160 bytes
       5 active, 65531 inactive, 87118 added
       0 flow alloc failures
       Exporting flows to 10.0.0.0 (9996)
       39009 ipv4 flows exported in 19199 udp datagrams, 0 failed
       Last clearing of statistics 11 Days 21:55:19
SrcIf             SrcIPAddress    DstIf             DstIPAddress      Pr  Tos
Flgs  Pkts
Port  Msk AS        Port  Msk AS                      NextHop           B/Pk
Active
GigabitEthernet 5/1 192.168.2.1     local            1.1.1.1          6   192
10    6
48837 /24 100       646   /32 0                    0.0.0.0          49      30
GigabitEthernet 5/3 10.0.0.2        GigabitEthernet 5/1 11.0.0.2         1   0
0     300
0     /24 0         0     /24 0                    0.0.0.0          100     47
Pos:Lbl-Exp-S 1:16-0-0 (LDP/2.2.2.2) 2:17-0-1
RD:100:1 VRF Name:vpn1
GigabitEthernet 5/1 11.0.0.2        GigabitEthernet 5/3 10.0.0.2         1   0
0     300
0     /24 0         0     /24 0                    0.0.0.0          100     47
```

```
Pos:Lbl-Exp-S 1:1024-0-1 (VPN/0.0.0.0)
RD:100:1 VRF Name:vpn1
GigabitEthernet 5/1  2.2.2.2        local             1.1.1.1           6   192
10    1
179   /32 100      15005 /32 0                      0.0.0.0           40      0
Protocol    Total        Flows     Packets     Bytes     Packets   Active(Sec)
Idle(Sec)
--------   Flows     /Sec    /Flow     /Pkt    /Sec    /Flow      /Flow
TCP-BGP    22398     0       1         48      0       2          15
TCP-other  13963     0       8         49      0       53         5
UDP-other  3838      0       4         152     0       4          15
ICMP-IPV4  27913     0       358       100     9       57         1
OSPF       11        0       6         92      0       4          14
Total:     68123     0       149       99      9       36         7
```

Field description:

Field	Description
active	Number of flow records in the current flow table
inactive	Number of flow records that can be created in the current flow table. The symbol "-" is displayed if no value is obtained.
added	Number of flow records created from the last flow table clearing time to current display time
flow alloc failures	Number of flows that fail to be created
Exporting flows to	Address and port number of the server, to which flow records are exported
ipv4 flows exported	Number of exported flows, packet format, and number of packets that fail to be exported
Last clearing of statistics	Time elapsed from the last flow table clearing operation to the current display
SrcIf	Source interface
SrcIPAddress	Source IP address/IPv6 address
DstIf	Destination interface
DstIPAddress	Destination IP address/IPv6 address
Pr	Protocol ID
Tos	ToS field in packets
Flgs	TCP flag or operation result of all packets in the flow records

Pkts	Number of packets
Port	Source port and destination port
Msk	Length of subnet mask of the source IP address and destination IP address
AS	Source AS number and destination AS number
NextHop	IP address of the next-hop AS
B/Pk	Average number of bytes in each packet
Active	Active time of a flow
Protocol	Protocol type
Total Flows	Total number of flows of a protocol type
Flows /Sec	Average number of flows per second
Packets/Flow	Average number of packets in each flow
Bytes/Pkt	Average number of bytes in each packet
Packets/Sec	Average number of packets per second
Active(Sec) /Flow	Average active time of each flow
Idle(Sec) /Flow	Average idle time of each flow
Pos:Lbl-Exp-S	Label position: label-EXP label-whether the label is a stack bottom label
LDP/2.2.2.2	Top label type and address
RD	Routing domain
VRF Name	VRF instance name

Prompt Message The main mode is not enabled.

```
Cache Disabled
```

8.11 show { ip | ipv6 } flow export

Use this command to display information about the server, to which flow records are exported.

show { **ip** | **ipv6** } **flow export**

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide This command is used to display exported information of all modes.

Configuration Examples The following example displays information about the server, to which flow records are exported.

```
Ruijie# show ip flow export
IPV4 main Cache:
       Exporting flows to 1.1.1.3 (9996)
       Exporting using source IP address 1.1.1.1
       Version 10 flow records
       IPV4 Template ID = 256
              Template timeout = 10 Minute(s)
              Template refresh rate = 20
       0 flows exported in 0 udp datagrams
       0 flows failed to export
       0 messages failed to export
```

Field description:

Field	Description
IPV4 main Cache	Display mode
Exporting flows to	IP address and port number of the server
Exporting using source IP address	Source IP address of exported packets
Version	IPFIX version of exported packets
IPV4 Template ID	Template ID of exported packets
Template timeout	Template packet retransmission interval, with the unit of minutes
Template refresh rate	Template packet retransmission frequency, with

	the unit of packets
0 flows exported in 0 udp datagrams	Number of exported flows and packets
flows failed to export	Number of flows that fail to be exported
messages failed to export	Number of packets that fail to be exported

8.12 show ip flow interface

Use this command to display the IPFIX configuration of an interface.

show ip flow interface

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide This command can be used to display the IPFIX configuration, including IPFIX IPv4 configuration and IPFIX IPv6 configuration of all interfaces.

Configuration Examples The following example displays the IPFIX configuration of an interface.

```
Ruijie# show ip flow interface
Ruijie# show ip flow interface
GigabitEthernet 0/1
  ip flow ingress
```

Field description:

Field	Description
ip flow ingress	The **ip flow interface** command is configured on an interface.

9 NETCONF Commands

9.1 netconf capability candidate

Use this command to enable the candidate and confirmed-commit capabilities of NETCONF. Use the **default** form of this command to restore the default settings. Use the **no** form of this command to disable the candidate and confirmed-commit capabilities of NETCONF.

netconf capability candidate

default netconf capability candidate

no netconf capability candidate

Parameter Description

Parameter	Description
N/A	N/A

Defaults The candidate and confirmed-commit capabilities of NETCONF are disabled by default.

Command Mode Global configuration mode

Default Level 14

Usage Guide Only sessions connected after this command is configured take effect.

Configuration Example The following example enables the candidate and confirmed-commit capabilities of NETCONF.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# netconf capability candidate
Ruijie(config)#
```

Verification N/A

Prompt N/A

Common Errors N/A

Platform Description N/A

9.2 netconf capability rollback

Use this command to enable the rollback-on-error capability of NETCONF. Use the **default** form of

this command to restore the default settings. Use the **no** form of this command to disable the rollback-on-error capability of NETCONF.

netconf capability rollback

default netconf capability rollback

no netconf capability rollback

Parameter Description

Parameter	Description
N/A	N/A

Defaults The rollback-on-error capability of NETCONF is disabled by default.

Command Mode Global configuration mode

Default Level 14

Usage Guide Only sessions connected after this command is configured take effect.

Configuration Example The following example enables the rollback-on-error capability of NETCONF.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# netconf capability rollback
Ruijie(config)#
```

Verification N/A

Prompt N/A

Common Errors N/A

Platform Description N/A

9.3 netconf capability validate

Use this command to enable the validate capability of NETCONF. Use the **default** form of this command to restore the default settings. Use the **no** form of this command to disable the validate capability of NETCONF.

netconf capability validate

default netconf capability validate

no netconf capability validate

Parameter Description

Parameter	Description

N/A	N/A

Defaults The validate capability of NETCONF is disabled by default.

Command Mode Global configuration mode

Default Level 14

Usage Guide Only sessions connected after this command is configured take effect.

Configuration Example The following example enables the validate capability of NETCONF.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# netconf capability validate
Ruijie(config)#
```

Verification N/A

Prompt N/A

Common Errors N/A

Platform Description N/A

9.4 netconf dscp

Use this command to configure the DSCP value of NETCONF communication packets. Use the **default** form of this command to restore the default settings.

netconf dscp [**ip** | **ipv6**] **ssh** *value*

default netconf dscp [**ip** | **ipv6**] **ssh**

Parameter Description

Parameter	Description
value	indicates the DSCP value. The range is from 0 to 63. By default, the TOS value of the TCP packets for SSH session is 0 and the TOS value of the NETCONF communication packets is 8.

Defaults By default, the TOS value of the TCP packets for SSH session is 0 and the TOS value of the NETCONF communication packets is 8.

Command Mode Global configuration mode

Default Level 14

Usage Guide N/A

Configuration Example The following example configures the DSCP of NETCONF Communication packets.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# netconf dscp ip ssh 48
Ruijie(config)#
```

Verification N/A

Prompt N/A

Common Errors N/A

Platform Description N/A

9.5 netconf enable

Use this command to enable the NETCONF framework. Use the **no** form of this command to disable the NETCONF framework. Use the **default** form of this command to restore the default settings.

netconf enable

no netconf enable

default netconf enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults NETCONF framework is enabled by default.

Command Mode Global configuration mode

Default Level 14

Usage Guide N/A

Configuration Example The following example enables the NETCONF framework.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# netconf enable
Ruijie(config)#
```

Verification	N/A
Prompt	N/A
Common Errors	N/A
Platform Description	N/A

9.6 netconf feature-disable

Use this command to disable the feature function of NETCONF. Use the **default** form of this command to restore the default settings. Use the **no** form of this command to enable the feature function of NETCONF.

netconf feature-disable

default netconf feature-disable

no netconf feature-disable

Parameter Description

Parameter	Description
N/A	N/A

Defaults The feature function of NETCONF is enabled by default.

Command Mode Global configuration mode

Default Level 14

Usage Guide N/A

Configuration Example The following example disables the feature function of NETCONF.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# netconf feature-disable
Ruijie(config)#
```

Verification	N/A
Prompt	N/A
Common Errors	N/A
Platform	N/A

Description

9.7 netconf filter nodes-limit

Use this command to configure the maximum number of nodes which can be searched by the NETCONF session. Use the **default** form or **no** form of this command to restore the default settings.
netconf filter nodes-limit *num*
default netconf filter nodes-limit
no netconf filter nodes-limit

Parameter Description

Parameter	Description
num	Specifies the maximum number of nodes. The default value is 100000, and the value ranges from 100 to 2147483647.

Defaults By default, the maximum number of nodes which can be searched by the NETCONF session is 100000.

Command Mode Global configuration mode

Default Level 14

Usage Guide This configuration takes effect only on the search result whose target is running.

Configuration Example The following example configures the maximum number of nodes which can be searched by the NETCONF session.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# netconf filter nodes-limit 101
Ruijie(config)#
```

Verification N/A

Prompt N/A

Common Errors N/A

Platform Description N/A

9.8 netconf max-sessions

Use this command to configure the maximum number of the NETCONF session. Use the **default**

form or **no** form of this command to restore the default settings.

netconf max-sessions *num*

default netconf max-sessions

no netconf max-sessions

Parameter Description	**Parameter**	**Description**
	num	Specifies the maximum number of the NETCONF session. The default value is 5, and the value ranges from 1 to 36.

Defaults By default, the maximum number of the NETCONF session is 5.

Command Mode Global configuration mode

Default Level 14

Usage Guide N/A

Configuration Example The following example configures the maximum NETCONF session number.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# netconf max-sessions 15
Ruijie(config)#
```

Verification N/A

Prompt N/A

Common Errors N/A

Platform Description N/A

9.9 netconf port

Use this command to configure the NETCONF monitoring port. Use the **default** form or **no** form of this command to restore the default settings.

netconf port *num*

default netconf port

no netconf port

Parameter Description	**Parameter**	**Description**

num	Specifies the monitoring port. The default port is 830, and the value ranges from 1025 to 65535.

Defaults By default, port 830 is used for monitoring.

Command Mode Global configuration mode

Default Level 14

Usage Guide N/A

Configuration Example The following example configures the NETCONF monitoring port.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# netconf port 1234
Ruijie(config)#
```

Verification N/A

Prompt N/A

Common Errors N/A

Platform Description N/A

9.10 netconf yang multi-revision

Use this command to enable the YANG module multi-version notification of NETCONF. Use the **default** form of this command to restore the default settings. Use the **no** form of this command to disable the YANG module multi-version notification of NETCONF.

netconf yang multi-revision

default netconf yang multi-revision

no netconf yang multi-revision

Parameter Description

Parameter	Description
N/A	N/A

Defaults The YANG module multi-version notification of NETCONF is enabled by default.

Command Mode Global configuration mode

Default Level 14

Usage Guide N/A

Configuration Example The following example enables the YANG module multi-version notification of NETCONF.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# netconf yang multi-revision
Ruijie(config)#
```

Verification N/A

Prompt N/A

Common Errors N/A

Platform Description N/A

9.11 netconf yang suite openconfig

Use this command to enable the NETCONF to preferentially support the OpenConfig YANG model. Use the **default** form of this command to restore the default settings. Use the **no** form of this command to enable the NETCONF to preferentially support the self-defined YANG model by Ruijie.

netconf yang suite openconfig

default netconf yang suite openconfig

no netconf yang suite openconfig

Parameter Description

Parameter	Description
N/A	N/A

Defaults NETCONF preferentially supports the self-defined YANG model by Ruijie.

Command Mode Global configuration mode

Default Level 14

Usage Guide N/A

Configuration Example The following example enables the NETCONF to preferentially support the OpenConfig YANG model.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# netconf yang suite openconfig
This command will take effect after device restart.
```

```
Ruijie(config)#
```

Verification N/A

Prompt N/A

Common Errors N/A

Platform Description N/A

9.12 show netconf yang-suite

Use this command to display the NETCONF YANG model configuration.

show netconf yang-suite

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode, Global configuration mode

Default Level 14

Usage Guide Use this command to display the NETCONF YANG model configuration.

Configuration Example The following example displays the NETCONF YANG model configuration.

```
Ruijie#show netconf yang-suite
YANG suite:
  current configuration: rg-yang
  current       active: rg-yang
```

Verification N/A

Prompt N/A

Common Errors N/A

Platform Description N/A

10 gRPC Commands

10.1 authen aaa-config

Use this command to configure the retry count and timeout time for AAA server authentication. Use the **no** form of this command to restore the default retry count and timeout time of AAA server authentication.

authen aaa-config {**retry** *times* **| timeout** *second*}

no authen aaa-config {**retry | timeout**}

Parameter Description

Parameter	Description
retry	Sets the retry count for AAA server authentication.
times	Indicates the number of retries. The value ranges from **1** to **100**.
timeout	Sets the timeout time for AAA server authentication.
second	Indicates the timeout time, in seconds. The value ranges from **0** to **300** and the value **0** indicates that the authentication is considered failed after an AAA server timeout message is received.

Defaults The default retry count is 1 and the default timeout time is 4s.

Command Mode gRPC process configuration mode

Default Level 14

Usage Guide Use this command to configure the authentication retry count and timeout time for the AAA server authentication mode in the case of server login. It is not recommended to change the default retry count and timeout time. A large retry count or improper timeout time may result in AAA lockout for 15 minutes (you can run the **clear aaa local user lockout all** command to clear the AAA lockout).

Configuration Example The following example sets the retry count to 2 and timeout interval to 20s for AAA server authentication.

```
Ruijie(config)# grpc
Ruijie(config-grpc)# authen aaa-config retry 2
Ruijie(config-grpc)# authen aaa-config timeout 20
```

Verification Run the **show run** command to check whether the command is configured.

Prompt	N/A
Common Errors	N/A
Platform Description	N/A

10.2 authen login

Use this command to configure the authentication mode for server login. Use the **no** form of this command to configure the authentication-free mode for server login. Use the **default** form of this command to restore the default login authentication mode.

authen login {**local | authentication** *mlist*}

no authen login

default authen login

Parameter Description

Parameter	Description
local	Uses the local username library for authentication.
authentication	Uses a specified AAA server list for authentication.
mlist	Indicates the name of an AAA list.

Defaults Local login is configured by default, that is, the **authen login local** command is configured.

Command Mode gRPC process configuration mode

Default Level 14

Usage Guide After receiving a login request from a server, the device selects AAA local authentication, AAA server authentication, or authentication-free mode as required. When the authentication is successful, the device records the login user information, namely, the IP address and username of the server. The device responds only to acquisition event requests initiated by authenticated servers.

Configuration Example The following example sets the authentication mode to AAA local authentication.

```
Ruijie(config)# grpc
Ruijie(config-grpc)# authen login local
```

The following example sets the authentication mode to the authentication-free mode.

```
Ruijie(config)# grpc
Ruijie(config-grpc)# no authen login
```

Verification	Run the **show run** command to check whether the command is configured.
Prompt	N/A
Common Errors	N/A
Platform Description	N/A

10.3 clear grpc channel

Use this command to clear statistics of a server that subscribes to gRPC events.

clear grpc channel [*ip-address port-id*] [**counter**]

Parameter Description

Parameter	Description
ip-address	Specifies the server IPv4 address.
port-id	Specifies the port ID of the server.
counter	Indicates the packet transmission statistics of the channel.

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide Use this command to clear statistics of a server that subscribes to gRPC events.

Configuration Example The following example clears statistics of a server that subscribes to gRPC events.

```
Ruijie# clear grpc channel
```

The following example clears the statistics on transmitted packets of a server with the IP address of 192.168.1.1 and port ID of 50051 that subscribes to gRPC events.

```
Ruijie# clear grpc channel 192.168.1.1 50051 counter
```

Prompt	N/A
Platform Description	N/A

10.4 clear grpc subscr

Use this command to clear data of gRPC periodic events and real-time events.

clear grpc subscr [**sample**] [**counter**]

Parameter Description

Parameter	Description
sample	Indicates periodic events.
counter	Indicates event statistics.

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide Use this command to clear data of gRPC periodic events and real-time events.

Configuration Example The following example clears data of gRPC periodic events and real-time events.

```
Ruijie# clear grpc subscr
```

The following example clears statistics on gRPC periodic events.

```
Ruijie# clear grpc subscr sample counter
```

Prompt N/A

Platform Description N/A

10.5 destination-group

Use this command to configure a destination group. Use the **no** form of this command to delete a destination group.

destination-group *group_id*

no destination-group *group_id*

Parameter Description

Parameter	Description
group_id	Identifies a group uniquely.

Defaults N/A

Command Mode gRPC process configuration mode

Default Level 14

Usage Guide	Use this command to create a gRPC destination group and switch to the gRPC destination group configuration mode. In this mode, multiple destination addresses can be configured in this group.

Configuration Examples	The following example configures a destination group with the unique ID of 1.
	`Ruijie(config)# grpc`
	`Ruijie(config-grpc)# destination-group 1`

Verification	Run the **show run** command to check whether this command is configured.
Prompt Message	N/A
Common Errors	N/A
Platform Description	N/A

10.6 destination-group

Use this command to configure the destination group in a subscription association.
Use the **no** form of this command to delete the destination group in a subscription association.
destination-group *group_id*
no destination-group *group_id*

Parameter Description	**Parameter**	**Description**
	group_id	Identifies a destination group uniquely.

Defaults	N/A
Command Mode	gRPC subscription association configuration mode
Default Level	14
Usage Guide	Use this command to configure the destination group in a subscription association.

Configuration Examples	The following example configures a destination group with the unique ID of 1.
	`Ruijie(config)# grpc`
	`Ruijie(config-grpc)# subscription 1`
	`Ruijie(config-grpc-subscription)# destination-group 1`

Verification	Run the **show run** command to check whether this command is configured.
Prompt Message	N/A
Common Errors	N/A
Platform Description	N/A

10.7 dscp

Use this command to configure the DSCP value for gRPC packets. Use the **no** form of this command to restore the DSCP value to the default value.

dscp *dscp*

no dscp

Parameter Description

Parameter	Description
dscp	Indicates the DSCP value for gRPC packets. The value ranges from 0 to 63.

Defaults	The default value is **0**.
Command Mode	gRPC process configuration mode
Default Level	14
Usage Guide	Use this command on the device to configure the DSCP value for gRPC packets.

Configuration Examples	The following example sets the DSCP value to **46** for gRPC packets.
	`Ruijie(config)# grpc`
	`Ruijie(config-grpc)# dscp 46`

Verification	Run the **show run** command to check whether this command is configured.
Prompt Message	N/A
Common Errors	N/A
Platform	N/A

Description

10.8 heartbeat

Use this command to configure the heartbeat detection mechanism. Use the **no** form of this command to restore the suppression time for real-time events to the default value.

heartbeat inform [interval *interval*] **[keepalive-times** *times*]

no heartbeat inform

Parameter Description

Parameter	Description
inform	Enables the heartbeat detection mechanism.
interval	Configures the heartbeat detection interval, in seconds. The value ranges from 1 to 3600.
times	Configures the number of heartbeat keepalive times. If the number of keepalive failures exceeds this value, it is deemed that the server malfunctions. The value ranges from 1 to 300.

Defaults No heartbeat message is sent by default.

Command Mode gRPC process configuration mode

Default Level 14

Usage Guide The heartbeat detection mechanism can be enabled on the device to detect whether the server operates properly. When the number of heartbeat failures or the number of consecutive result absence times exceeds this value, it is deemed that the server malfunctions. If a slave server is configured and operates properly, the slave server is switched to act as the master role and subsequent data will be sent to the slave server. If the slave server also becomes abnormal but the master server recovers, the master server acts as the master role again.

Configuration Examples The following example enables the heartbeat detection mechanism, and sets the detection interval to 1s and the number of keepalive times to 1.

```
Ruijie(config)# grpc
Ruijie(config-grpc)# heartbeat inform interval 1 keepalive-times
1
```

Verification Run the **show run** command to check whether this command is configured.

Prompt Message N/A

Common Errors	N/A
Platform Description	N/A

10.9 ip

Use this command to configure the IP address and port ID of the destination server. Use the **no** form of this command to delete the IP address and port ID of the destination server.

ip *ip-address* **port** *port*

no ip *ip-address* **port** *port*

Parameter Description

Parameter	Description
ip-address	Indicates the IPv4 address of the server.
port	Indicates the port ID of the server.

Defaults	N/A
Command Mode	gRPC destination group configuration mode
Default Level	14
Usage Guide	Use this command to configure the address of the gRPC server.
Configuration Examples	The following example configures a gRPC subscription server with the IP address 192.168.0.1 and port ID 12345.

```
Ruijie(config)# grpc
Ruijie(config-grpc)# destination-group 1
Ruijie(config-grpc-destination)# ip 192.168.0.1 port 12345
```

Verification	Run the **show run** command to check whether this command is configured.
Prompt Message	N/A
Common Errors	N/A
Platform Description	N/A

10.10 grpc

Use this command to create the gRPC mode and enable the gRPC function. Use the **no** form of this command to delete the gRPC mode and disable the gRPC function.

grpc

no grpc

Parameter Description

Parameter	Description
N/A	N/A

Defaults The gRPC mode is not created and the gRPC function is disabled by default.

Command Mode Global configuration mode

Default Level 14

Usage Guide Use this command to create a gRPC instance, enable the gRPC function, and enter the gRPC process configuration mode.

The gRPC client and gRPC server services are created at the same time when the gRPC function is enabled. The gRPC client service uploads data to a server while the gRPC server service parses authentication messages and acquisition messages sent from a server.

Configuration Example The following example creates the gRPC mode.

```
Ruijie# configure terminal
Ruijie(config)# grpc
```

Verification Run the **show run** command to check whether the gRPC mode is created.

Prompt N/A

Common Errors N/A

Platform Description N/A

10.11 reply-timeout

Use this command to set the data response timeout time for the device serving as the gRPC server. Use the **no** form of this command to restore the default data response

timeout time of the device serving as the gRPC server.

reply-timeout *interval*

no reply-timeout

Parameter Description

Parameter	Description
interval	Indicates the data response timeout time of the device serving as the gRPC server, in seconds. The default value is 10 and the value ranges from 1 to 300.

Defaults The default value is 10 seconds.

Command Mode gRPC process configuration mode

Default Level 14

Usage Guide After timeout time is set for the gRPC process and the collector delivers the GET/SET operation, the device returns a timeout error to the collector if it fails to obtain data within the timeout time.

Configuration Examples The following example sets the gRPC data response timeout time to 30 seconds.

```
Ruijie(config)# grpc
Ruijie(config-grpc)# reply-timeout 30
```

Verification Run the show run command to check whether the command is configured.

Prompts N/A

Common Errors N/A

Platform Description N/A

10.12 rpc

Use this command to enable functions defined in **gnmi.proto**. Use the **no** form of this command to disable functions defined in **gnmi.proto**.

rpc gnmi enable

no rpc gnmi enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults	Functions defined in **gnmi.proto** are disabled by default.
Command Mode	gRPC process configuration mode
Default Level	14
Usage Guide	Use this command to enable functions defined in **gnmi.proto,** so that the functions become available.

Configuration Examples	The following example enables functions defined in **gnmi.proto**.
	`Ruijie(config)# grpc`
	`Ruijie(config-grpc)# rpc gnmi enable`

Verification	Run the **show run** command to check whether the configuration is successful.
Prompt Message	N/A
Common Errors	N/A
Platform Description	N/A

10.13 sensor-group

Use this command to configure a YANG model path group.

sensor-group *group-id*

Use the **no** form of this command to delete a YANG model path group.

no sensor-group *group-id*

Parameter Description

Parameter	Description
group-id	Identifies a group uniquely.

Defaults	N/A
Command Mode	gRPC process configuration mode
Default Level	14
Usage Guide	Use this command to create a gRPC YANG model path group and switch to the gRPC

YANG model group configuration mode.
In this mode, you can configure multiple YANG model paths in this group.

Configuration Examples The following example configures a gRPC YANG model path group with the unique ID of 1.

```
Ruijie(config)# grpc
Ruijie(config-grpc)# sensor-group 1
```

Verification Run the **show run** command to check whether this command is configured.

Prompt Message N/A

Common Errors N/A

Platform Description N/A

10.14 sensor-group

Use this command to configure the YANG model path group in a subscription association.
sensor-group *group_id* [**sample-interval** *interval*]
Use the **no** form of this command to delete the YANG model path group in a subscription association.
no sensor-group *group_id*

Parameter Description

Parameter	Description
group_id	Identifies a YANG model path group uniquely.
interval	Indicates the periodic collection interval, in milliseconds.

Defaults N/A

Command Mode gRPC subscription association configuration mode

Default Level 14

Usage Guide Use this command to configure the data source of a subscription association. If ***sample-interval*** is configured, data needs to be collected periodically. If it is not configured, triggered data needs to be collected.

Configuration Examples The following example configures the device to collect data on all YANG model paths of the YANG model path group with the unique ID of 1 at an interval of 1s.

```
Ruijie(config)# grpc
Ruijie(config-grpc)# subscription 1
Ruijie(config-grpc-subscription)# sensor-group 1 sample-interval
1000
```

Verification Run the **show run** command to check whether this command is configured.

Prompt Message N/A

Common Errors N/A

Platform Description N/A

10.15 sensor-path

Use this command to configure a YANG model path.

sensor-path *path*

Use the **no** form of this command to delete a YANG model path.

no sensor-path *path*

Parameter Description

Parameter	Description
path	Indicates a YANG model path.

Defaults N/A

Command Mode gRPC YANG model group configuration mode

Default Level 14

Usage Guide Configure a YANG model path in a YANG model path group. For the path compilation, refer to the output of the **show grpc yang tree/node-path** command.

Configuration Examples The following example configures the YANG model path: **/rg-bridge:bridge/vlan/entry[id='1']/swport-list**.

```
Ruijie(config)# grpc
Ruijie(config-grpc)# sensor-group 1
Ruijie(config-grpc-sensor)#$ sensor-path
/rg-bridge:bridge/vlan/entry[id='1']/swport-list
```

Verification Run the **show run** command to check whether this command is configured.

Prompt Message N/A

Common Errors N/A

Platform Description N/A

10.16 standby-server

Use this command to preconfigure a slave subscription server.

standby- server *ip-address port-id*

Use the **no** form of this command to delete a preconfigured slave subscription server.

no standby- server

Parameter Description

Parameter	Description
ip-address	Indicates the IPv4 address of the server.
port-id	Indicates the port ID of the server.

Defaults N/A

Command Mode gRPC subscription server mode

Default Level 14

Usage Guide Use this command to configure a slave server. After the heartbeat detection mechanism is enabled, if the master server is found faulty and the slave server operates properly, the slave server is switched to act as the master role. If the slave server also becomes abnormal but the master server recovers, the master server acts as the master role again.

Configuration Examples The following example configures a slave server with the IP address 192.168.0.2 and port ID 12345 for the gRPC subscription server with the IP address 192.168.0.1 and port ID 12345.

```
Ruijie(config)# grpc
Ruijie(config-grpc)# user-server 192.168.0.1 12345
Ruijie(config-grpc-us)# standby-server 192.168.0.2 12345
```

Verification Run the **show run** command to check whether this command is configured.

Prompt Message	N/A
Common Errors	N/A
Platform Description	N/A

10.17 subscr

Use this command to enable subscribed events of gRPC. Use the **no** form of this command to disable subscribed events of gRPC.

subscr [realtime | sample] enable

no subscr [realtime | sample] enable

Parameter Description

Parameter	Description
realtime	Indicates subscribed real-time events.
sample	Indicates subscribed periodic events.

Defaults Subscribed events are disabled by default.

Command Mode gRPC process configuration mode

Default Level 14

Usage Guide After configuring to-be-subscribed events, the gRPC process waits for the NETCONF manager to send a subscribed event. When a received subscription message matches the local to-be-subscribed event, the gRPC process enables the function of reporting gRPC data of the event to the server. After the NETCONF manager sends an unsubscribed event, if the received unsubscription message matches the local to-be-subscribed event, the gRPC process disables the function of reporting gRPC data of the event to the server.

If the gRPC process configures no to-be-subscribed event, the gRPC process performs no processing when receiving a subscribed or unsubscribed event from the NETCONF manager.

Configuration Example The following example configures to-be-subscribed real-time events of gRPC.

```
Ruijie(config)# grpc
Ruijie(config-grpc)# subscr realtime enable
```

Verification	Run the **show run** command to check whether the command is configured.
Prompt	N/A
Common Errors	N/A
Platform Description	N/A

10.18 subscr-realtime-interval

Use this command to configure the suppression interval for real-time events. Use the **no** form of this command to restore the default suppression interval of real-time events.

subscr-realtime-interval {all *interval* **| realtime** *json-event interval***}**

no subscr-realtime-interval {all | realtime *type***}**

Parameter Description

Parameter	Description
all	Indicates that the configuration takes effect on all real-time events.
realtime	Indicates that the configuration takes effect on a specific real-time event.
json-event	Indicates the type of the configured real-time event. For details, see the output of the **show grpc subscr | include json** command.
interval	Specifies the suppression interval for reporting data of real-time events, in milliseconds. The value ranges from **1** to **1000000** and real-time events are not suppressed by default.

Defaults	Real-time events are not suppressed by default.
Command Mode	gRPC process configuration mode
Default Level	14
Usage Guide	After the device enables a subscribed real-time event, if the threshold of the event is triggered, real-time packets are generated and sent to the server that subscribes to the event. When the threshold is triggered frequently, a large number of packets are generated and sent to the server within a short period of time. Data of these packets may be the same but handling these packets greatly increases the overheads of the

device and server. To prevent this case, run the **subscr-realtime-interval** command to suppress the generation of new packets for real-time events within a period of time.

Configuration Example

The following example sets the suppression time to 500 ms for all real-time events.

```
Ruijie(config)# grpc
Ruijie(config-grpc)# subscr-realtime-interval all 500
```

Verification

Run the **show run** command to check whether the command is configured.

Prompt

N/A

Common Errors

N/A

Platform Description

N/A

10.19 subscr-sample-interval

Use this command to configure the timer interval for periodic events. Use the **no** form of this command to restore the default timer interval of periodic events.

subscr-sample-interval *interval* [**millisecond** *millisecond*]

no subscr-sample-interval

Parameter Description

Parameter	Description
interval	Indicates the locally configured interval for reporting periodic events, in seconds. The value ranges from **0** to **65535** and the default value is **10**. This value plus *millisecond* is the actual reporting interval.
millisecond	Indicates the millisecond part in the locally configured interval for reporting periodic events, in milliseconds. The value ranges from 0 to 999 and the default value is 0. This value plus *interval* is the actual reporting interval. Currently, the allowable minimum reporting interval is 100 milliseconds.

Defaults The default interval is 10s.

Command Mode gRPC process configuration mode

Default Level 14

Usage Guide After a subscribed periodic event of the device is enabled and the NETCONF manager sends the subscribed periodic event, the gRPC process starts a periodic event timer and sends gRPC data to the server that subscribes to the event. When the periodic event sent by the NETCONF manager does not carry the timer interval, the timer interval is determined by the **subscr-sample-interval** command. When the periodic event sent by the NETCONF manager carries the timer interval, this timer interval shall prevail.

Configuration Example The following example sets the timer interval to 15s for periodic packets.

```
Ruijie(config)# grpc
Ruijie(config-grpc)# subscr-sample-interval 15
```

The following example sets the timer interval to 100 milliseconds for periodic packets.

```
Ruijie(config)# grpc
Ruijie(config-grpc)# subscr-sample-interval 0 millisecond 100
```

Verification	Run the **show run** command to check whether the command is configured.
Prompt	N/A
Common Errors	N/A
Platform Description	N/A

10.20 subscr-source-interface

Use this command to configure a source interface for the real-time and periodic data. Use the **no** form of this command to restore the default settings of the source interface for the real-time and periodic data.

subscr-source-interface *interface-type interface-number*

no subscr-source-interface

Parameter Description

Parameter	Description
interface-type interface-number	Specifies an interface name.

Defaults	The source interface for real-time and periodic data is random by default.
Command Mode	gRPC process configuration mode
Default Level	14
Usage Guide	By default, the real-time and periodic data is sent from a random source interface. You can use this command to enable the server to receive packets from a specified interface only.

Configuration Example	The following example binds the specified interface loopback 0 to send real-time and periodic data.
	`Ruijie(config)# grpc`
	`Ruijie(config-grpc)# subscr-source-interface Loopback 0`

Verification	Run the **show run** command to check whether the command is configured.
Prompt	N/A
Common	N/A

Errors

Platform Description	N/A

10.21 type

Use this command to preconfigure to-be-subscribed events of a specified server. Use the **no** form of this command to delete to-be-subscribed events of a specified server.

type *json-event* **value** *value* [**value-extend** *value-extend*]

no type *json-event*

Parameter Description

Parameter	Description
json-event	Indicates the type of events. For details, see the output of the **show grpc subscr | include json** command.
value	Configures the parameter value, that is, the threshold for real-time events and time interval for periodic events.
value-extend	Indicates the extension field of *value*. This field is used to only set the millisecond part in the interval for reporting periodic events. The value ranges from 0 to 999. The allowable minimum interval is 100 milliseconds.

Defaults N/A

Command Mode gRPC server subscription mode

Default Level 14

Usage Guide Configure to-be-subscribed events and parameters for the channel, which should be consistent with the configuration on NETCONF.

Configuration Example The following example configures a gRPC server with the IP address of 192.168.0.1:12345, preconfigures the periodic event 0x10000000, and sets the time interval to 10 seconds for the event.

```
Ruijie(config)# grpc
Ruijie(config-grpc)# user-server 192.168.0.1 12345
Ruijie(config-grpc-us)# type 0x10000000 value 10
```

The following example configures a gRPC server with the IP address of 192.168.0.1:12345, preconfigures the periodic event 0x10000000, and sets the time interval to 100 milliseconds for the event.

```
Ruijie(config)# grpc
Ruijie(config-grpc)# user-server 192.168.0.1 12345
```

```
Ruijie(config-grpc-us)# type 0x10000000 value 0 value-extend 100
```

Verification Run the **show run** command to check whether the command is configured.

Prompt N/A

Common Errors The threshold for real-time events ranges from **–1** to **100**, the time interval for periodic events ranges from –1 to **65535**, and an existing type needs to be used. Otherwise, the configuration does not take effect and is not retained.

Platform Description N/A

10.22 user-client

Use this command to preconfigure information about login users of servers. Use the **no** form of this command to delete preconfigured information about login users of servers.

user-client *id user-name ip-address*

no user-client *id*

Parameter Description

Parameter	Description
id	Indicates the ID of a login user.
user-name	Indicates the username (unrelated to the AAA library; there may be no login user).
ip-address	Indicates the allowed server address.

Defaults N/A

Command Mode gRPC process configuration mode

Default Level 14

Usage Guide The device can precreate login users of authenticated servers via commands, or a server can be simulated to initiate a login request, pass authentication, and save information about the login users.

The device can delete login users of authenticated servers via commands, or a server can be simulated to initiate a logout request and delete information about the login users.

Configuration Example The following example configures information about the login user of a server, in which the ID of the login user is 12345, username is test-user, and server address is

192.168.0.1.

```
Ruijie(config)# grpc
Ruijie(config-grpc)# user-client 12345 test-user 192.168.0.1
```

Verification Run the **show run** command to check whether the command is configured.

Prompt N/A

Common Errors N/A

Platform Description N/A

10.23 user-server

Use this command to preconfigure a server that can subscribe to events. Use the **no** form of this command to delete the preconfigured server that can subscribe to events.

user-server *ip-address port-id*

no user- server *ip-address port-id*

Parameter Description

Parameter	Description
ip-address	Specifies the server IPv4 address.
port-id	Specifies the port ID of the server.

Defaults N/A

Command Mode gRPC process configuration mode

Default Level 14

Usage Guide Use this command to precreate a specified server channel and switch to the gRPC server subscription mode.

The to-be-subscribed events of the channel can be configured in this mode.

The device can precreate servers and to-be-subscribed events via commands, or a controller can be simulated to notify the device of servers and to-be-subscribed events via NETCONF.

The device can delete servers and subscribed events via commands, or a controller can be simulated to notify the device of servers and unsubscribed events via NETCONF.

Configuration Example The following example configures a server with the IP address and ID of 192.168.0.1:12345 that subscribes to gRPC events.

```
Ruijie(config)# grpc
Ruijie(config-grpc)# user-server 192.168.0.1 12345
```

Verification Run the **show run** command to check whether the command is configured.

Prompt N/A

Common Errors N/A

Platform Description N/A

10.24 show grpc channel

Use this command to display the IP address, port ID, and subscribed events of a server or various statistics.

show grpc channel [**counter**]

Parameter Description

Parameter	Description
counter	Displays packet transmission statistics of a channel.

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Example The following example displays the IP address, port ID, and subscribed events of a server.

```
Ruijie# show grpc channel
Server subscr all:
  server ip 172.31.32.70 port 50051
  state IDLE
  subscr event:
    GRPC_JSON_EVENT_SAMPLE_DCB_PFC_PAUSE_STAT (0x10010000)

  server ip 172.31.32.71 port 50051
```

```
 state TRANSIENT_FAILURE
 subscr event:
   GRPC_JSON_EVENT_REALTIME_CLI_CMD_LOG (0x00000000)
```

The following example displays statistics on packets sent to the server.

```
Ruijie#show grpc channel counter
Server subscr all:
 server ip 172.31.32.70 port 50051
 state TRANSIENT_FAILURE
 json list count: 0
 json send count: 1
 json drop count: 0
 call list count: 0
 call send count: 1
 call drop count: 0

 server ip 172.31.32.71 port 50051
 state TRANSIENT_FAILURE
 json list count: 0
 json send count: 1
 json drop count: 0
 call list count: 0
 call send count: 1
 call drop count: 0
```

Field description:

Field	Description
server ip	IP address of the server to which information is to be reported
port	Port ID of the server to which information is to be reported
state	Status of the channel between the current device and the server
subscr event	Event subscribed by the server
json list count	To-be-sent JSON data cached in the gRPC process
json send count	Sent JSON data cached in the gRPC process
json drop count	Discarded JSON data cached in the gRPC process
call list count	To-be-sent data cached in the gRPC process
call send count	Sent data cached in the gRPC process
call drop count	Discarded data cached in the gRPC process

Prompt N/A

Platform Description N/A

10.25 show grpc gnmi subscription

Use this command to display subscription associations generated via RPC methods defined in **gnmi.proto** (including **dial_out.proto**).

show grpc gnmi subscription

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays dynamic subscription associations automatically generated via RPC methods defined in **gnmi.proto**.

```
Ruijie# show grpc gnmi subscription
persistent subscriptions:
  subscription 1:
    sensor group 1:
      sample interval: 1000
      sample timer count: 870
      sensor path: /rg-bridge:bridge/vlan/entry/swport-list
        state: NORMAL
        recv count: 869
    destination group 1:
      destination: 172.30.31.30:50051
        state: READY
        task list count: 0
        task drop count: 0
        send request count: 847
        send update count: 69454
        recv response count: 847
dynamicsubscriptions:
  client(172.30.31.30:54080):
    subscriptions:
```

```
    subscription:
      path: /rg-bridge:bridge/vlan/entry[id='1']
      mode: 2
      sample_interval: 10000
```

Field description:

Field	Description
persistent subscription	Static subscription, which is the same as the output of the **show grpc openconfig subscription** command.
subscription	Unique ID of a subscription association.
sensor group	YANG model path group.
sample interval	Subscription interval. The value **0** indicates real-time subscription of triggered data.
sample timer count	Number of started timers, that is, number of service data acquisition times.
sensor path	YANG model path.
state	State of the YANG model path. It has two values: ● **NORMAL**: indicates the normal state. ● **GIVEUP**: Abandons data acquisition.
recv count:	Number of service data receiving times, which is usually the same as the number of started timers.
destination group	Unique ID of the destination group.
destination	Destination address.
state	Advertised state of the channel between the current device and the server.
task list count	Number of to-be-sent task lists cached by the gRPC process.
task drop count	Number of tasks discarded after being cached by the gRPC process. A maximum of 10,000 task lists can be cached. Task lists beyond this number will be discarded.
send request count	Number of requests sent by the gRPC process by invoking RPC.
send update count	Number of update objects (defined in **dial_out.proto)** sent by the gRPC process.
recv response count	Number of server responses received by the gRPC process.
dynamic subscriptions:	Dynamic subscription (data is subscribed to via the Subscribe RPC method defined in **gnmi.proto**).
client	Client IP address.
path	Subscribed YANG model path.
mode	Subscription mode. It has three values: ● **0**: default mode ● **1**: subscription to triggered data ● **2**: periodic subscription
sample_interval	Interval of periodic subscription, in milliseconds.

Prompt Message	N/A
Platform Description	N/A

10.26 show grpc openconfig subscription

Use this command to display the configuration of subscription associations implemented through openconfig-telemetry.yang.

show grpc openconfig subscription

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays static subscription associations configured on the device.

```
Ruijie#show grpc openconfig subscription
all subscriptions:
  subscription 1:
    sensor group 1:
      sample interval: 1000
      sample timer count: 77
      sensor path: /rg-bridge:bridge/vlan/entry/swport-list
        state: NORMAL
        recv count: 77
    destination group 1:
      destination: 172.30.31.30:50051
        state: READY
        task list count: 0
        task drop count: 0
        send request count: 55
        send update count: 4510
        recv response count: 55
```

Field description:

Field	Description
subscription	Unique ID of a subscription association.

sensor group	YANG model path group.
sample interval	Subscription interval. The value **0** indicates real-time subscription of triggered data.
sample timer count	Number of started timers, that is, number of service data acquisition times.
sensor path	YANG model path.
state	State of the YANG model path. It has two values: ● **NORMAL**: indicates the normal state. ● **GIVEUP**: Abandons data acquisition.
recv count:	Number of service data receiving times, which is usually the same as the number of started timers.
destination group	Unique ID of the destination group.
destination	Destination address.
state	Advertised state of the channel between the current device and the server.
task list count	Number of to-be-sent task lists cached by the gRPC process.
task drop count	Number of tasks discarded after being cached by the gRPC process. A maximum of 10,000 task lists can be cached. Task lists beyond this number will be discarded.
send request count	Number of requests sent by the gRPC process by invoking RPC.
send update count	Number of update objects (defined in **dial_out.proto**) sent by the gRPC process.
recv response count	Number of server responses received by the gRPC process.

Prompt Message N/A

Platform Description N/A

10.27 show grpc client

Use this command to display information about login users of gRPC servers.

show grpc client

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Example The following example displays information about login users of servers, including their IP addresses and usernames.

```
Ruijie# show grpc client
Client information all:
  1     : ruijie@172.31.32.71, ID 12345
  2     : root@172.31.32.72, ID 12346
```

Field description:

Field	Description
1	Sequence number of a login server
ruijie	Username used for server login
172.31.32.71	IP address of the login server
ID 12345	Login server ID

Prompt N/A

Platform Description N/A

10.28 show grpc status

Use this command to display the running status of gRPC.

show grpc status

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Example The following example displays the running status of gRPC.

```
Ruijie# show grpc status
GRPC:
  Uptime: 10h:08m:29s
```

Field description:

Field	Description
Uptime	Running duration of the gRPC function after being enabled

Prompt N/A

Platform Description N/A

10.29 show grpc subscr

Use this command to display the statuses and statistics of subscribed events on the device.

show grpc subscr [**realtime | sample**]

Parameter Description

Parameter	Description
realtime	Indicates subscribed real-time events.
sample	Indicates subscribed periodic events.

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Example The following example displays the statuses of subscribed real-time events on the device.

```
Ruijie# show grpc subscr realtime
Subscr realtime all:
  json event: GRPC_JSON_EVENT_REALTIME_CLI_CMD_LOG (0x00000000)
    server subscr count: 1
    server threshold: 0
    local realtime interval: 0

  json event: GRPC_JSON_EVENT_REALTIME_SS_ERSPAN_PACKAGE
(0x00010000)
    server subscr count: 0
    server threshold: 0
    local realtime interval: 0
```

Field description:

Field	Description
json event	Module real-time event that is

	subscribed
server subscr count	Number of servers subscribing to this event
server threshold	Threshold for triggering the subscribed event
local realtime interval:	Locally configured suppression time for message generation for the subscribed real-time event

The following example displays the statuses and statistics of subscribed periodic events on the device.

```
Ruijie# show grpc subscr sample
Subscr sample all:
  json event: GRPC_JSON_EVENT_SAMPLE_SS_QOS_ECN_WRED_STAT
(0x10000000)
    timer expire: 9204 msec
    timer reopen expire: inactive
    local sample interval: 14
    server sample interval: 0
    server subscr count: 1
    sample event drop: 0
    sample pkt recv: 181
    sample pkt drop: 0

  json event: GRPC_JSON_EVENT_SAMPLE_SS_MMU_LOSS_CNT (0x10000001)
    timer expire: inactive
    timer reopen expire: inactive
    local sample interval: 14
    server sample interval: 0
    server subscr count: 0
    sample event drop: 0
    sample pkt recv: 0
    sample pkt drop: 0
```

Field description:

Field	Description
json event	Module periodic event that is subscribed
timer expire	Timer for reporting the subscribed periodic event
timer reopen expire	Restart timer for reporting the subscribed periodic event
local sample interval	Locally configured interval for reporting the subscribed event
server sample interval	Interval for reporting the event

	subscribed by the last server
server subscr count	Number of servers subscribing to this event
sample event drop	Number of timeout times of the periodic event
sample pkt recv	Number of received packets, that is, packets that are not discarded
sample pkt drop	Number of packets discarded due to timeout

Prompt N/A

Platform Description N/A

10.30 show grpc yang node-path

Use this command to display the path of a YANG node.
show grpc yang tree [*module_name*]

Parameter Description

Parameter	Description
module_name	Indicates the module name.

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays all paths defined in the RG-gRPC YANG file.

```
Ruijie#show grpc yang node-path rg-grpc

==========================[rg-grpc]=========================
==
/rg-grpc:grpc/client-instance/id
/rg-grpc:grpc/client-instance/enable-realtime
/rg-grpc:grpc/client-instance/enable-sample
/rg-grpc:grpc/client-instance/enable-gnmi
/rg-grpc:grpc/client-instance/realtime-interval/event-type
/rg-grpc:grpc/client-instance/realtime-interval/event-interva
```

```
l
/rg-grpc:grpc/client-instance/sample-interval
/rg-grpc:grpc/client-instance/sample-interval-ms
/rg-grpc:grpc/client-instance/source-interface
/rg-grpc:grpc/client-instance/reply-interface
/rg-grpc:grpc/client-instance/login-type
/rg-grpc:grpc/client-instance/login-mlist
/rg-grpc:grpc/client-instance/aaa-config-retry
/rg-grpc:grpc/client-instance/aaa-config-timeout
/rg-grpc:grpc/client-instance/reply-timeout
/rg-grpc:grpc/client-instance/subscription/server-ipv4
/rg-grpc:grpc/client-instance/subscription/server-port
/rg-grpc:grpc/client-instance/subscription/event/type
/rg-grpc:grpc/client-instance/subscription/event/value
/rg-grpc:grpc/client-instance/subscription/event/value-extend
```

Prompt Message N/A

Platform Description N/A

10.31 show grpc yang tree

Use this command to display the YANG model tree defined in the RG-gRPC YANG file.

show grpc yang tree [*module_name*]

Parameter Description

Parameter	Description
module_name	Indicates the module name.

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays the tree structure of the RG-gRPC module.

```
Ruijie#show grpc yang tree rg-grpc

==========================module
info============================
```

```
module: rg-grpc
   +--rw grpc
      +--rw client-instance* [id]
         +--rw id                 int32
         +--rw enable-realtime?     boolean
         +--rw enable-sample?       boolean
         +--rw enable-gnmi?         boolean {grpc-gnmi}?
         +--rw realtime-interval* [event-type]
         |  +--rw event-type       uint32
         |  +--rw event-interval?   int32
         +--rw sample-interval?     int32
         +--rw sample-interval-ms?   int32 {grpc-set-and-ms}?
         +--rw source-interface?    string
         +--rw    reply-interface?                      string
{grpc-reply-interface}?
         +--rw login-type?          int32 {grpc-login-type}?
         +--rw login-mlist?         string {grpc-login-type}?
         +--rw aaa-config-retry?    uint32 {grpc-login-type}?
         +--rw aaa-config-timeout?   uint32 {grpc-login-type}?
         +--rw reply-timeout?       uint32 {grpc-set-and-ms}?
         +--rw subscription* [server-ipv4 server-port]
            +--rw server-ipv4    ietf-inet-types:ipv4-address
            +--rw server-port    ietf-inet-types:port-number
            +--rw event* [type]
               +--rw type           uint32
               +--rw value?         int32
               +--rw value-extend?   int32 {grpc-set-and-ms}?
Ruijie#
```

Prompt Message	N/A
Platform Description	N/A

10.32 subscription

Use this command to configure the subscription association between a YANG model path group and a destination group. Use the **no** form of this command to delete the subscription association.

subscription *subscription_id*

no subscription *subscription_id*

Parameter	**Parameter**	**Description**

Description		
	subscription_id	Identifies a subscription association uniquely.

Defaults N/A

Command Mode gRPC process configuration mode

Default Level 14

Usage Guide Use this command to create a gRPC subscription association and switch to the gRPC subscription association mode.
In this mode, you can configure subscription associations between multiple YANG model path groups and multiple destination groups.

Configuration Examples The following example configures a gRPC subscription association with the unique ID of 1.

```
Ruijie(config)# grpc
Ruijie(config-grpc)# subscription 1
```

Verification Run the **show run** command to check whether this command is configured.

Prompt Message N/A

Common Errors N/A

Platform Description N/A

11 IFA Commands

11.1 clear ifa statistics

Use this command to clear the IFA statistics.

clear ifa statistics

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide N/A

Configuration Example The following example clears the IFA statistics.

```
Ruijie#clear ifa statistics
```

Verification Run the **show ifa statistics** command to display the IFA statistics.

Prompt N/A

Common Errors N/A

Platform Description N/A

11.2 ifa acl

Use this command to configure an IFA sampling–associated ACL and sampling rate. Use the **no** form of this command to delete the configured IFA sampling–associated ACL and sampling rate. Use the **default** form of this command to restore the default settings.

ifa acl { *id* | *name* } **rate** *rate*

no ifa acl { *id* | *name* } **rate** *rate*

default ifa acl { *id* | *name* } **rate** *rate*

Parameter Description

Parameter	Description
id	Indicates the ACL ID.
name	Indicates the ACL name.
rate	Indicates the sampling rate. The value ranges from **1** to **65535** and the default value is **1000**.

Defaults IFA sampling is disabled by default.

Command Mode Interface configuration mode

Default Level 14

Usage Guide This command can be configured only on physical ports and APs. Four sampling rules using different ACLs and sampling rates can be configured for one interface.

Configuration Example The following example sets the IFA sampling–associated ACL to 100 and sampling rate to 200.

```
Ruijie(config-if-TenGigabitEthernet 0/15)# ifa acl 100 rate 200
```

Verification Run the **show run** command to check whether IFA sampling is configured on an interface.

Prompt N/A

Common Errors N/A

Platform Description N/A

11.3 ifa filter enable

Use this command to filter IFA packets on an interface. Use the **no** form of this command to delete IFA packet filtering configuration on an interface. Use the **default** form of this command to restore the default settings.

ifa filter enable

no ifa filter enable

default ifa filter enable

Parameter

Parameter	Description

Description		
	N/A	N/A

Defaults IFA packets are not filtered by default.

Command Mode Interface configuration mode

Default Level 14

Usage Guide This command can be configured only on physical ports and APs.

Configuration Example The following example filters IFA packets on the TenGigabitEthernet 0/5 interface.

```
Ruijie(config-if-TenGigabitEthernet 0/5)# ifa filter enable
```

Verification Run the **show run** command to check whether IFA packet filtering is configured on an interface.

Prompt N/A

Common Errors N/A

Platform Description N/A

11.4 ifa host-port

Use this command to configure an interface as the IFA server port or globally enable the IFA server port function. Use the **no** form of this command to delete the configuration of an interface serving as the IFA server port or globally disable the IFA server port function. Use the **default** form of this command to restore the default settings.

ifa host-port [**acl** *id* | *name*]

no ifa host-port

default ifa host-port

Parameter Description

Parameter	Description
id	ACL number
name	ACL name

Defaults No interface is configured as the IFA server port by default.

Command Mode	Interface configuration mode, global configuration mode
Default Level	14
Usage Guide	In interface configuration mode, this command is used to configure an interface as an IFA server port. This command can be configured only on physical ports and APs, on which ACLs cannot be applied. In global configuration mode, this command is used to enable the IFA server port. It is used in combination with the **ifa host-port** command in interface configuration mode. The IFA server port is available only after both commands are configured. In addition, this command can be used to enable the IFA server port only after the IFA server is configured. When matching rules are needed to identify INT packets, ACLs need to be configured before this command is applied.

Configuration Example	The following example configures the TenGigabitEthernet 0/16 interface as the IFA server port.
	`Ruijie(config)# ifa host-port acl 101`
	`Ruijie(config)# interface TenGigabitEthernet 0/16`
	`Ruijie(config-if-TenGigabitEthernet 0/16)# ifa host-port`

Verification	Run the **show run** command to check whether the command is configured.
Prompt	N/A
Common Errors	N/A
Platform Description	N/A

11.5 ifa passive md

Use this command to disable the function of adding the MD field to headers of IFA sampling packets on an interface. Use the **no** form of this command to delete the IFA server port configuration from an interface. Use the **no** form of this command to restore the default settings.

ifa passive md

no ifa passive md

default ifa passive md

Parameter Description

Parameter	Description
N/A	N/A

Defaults	The function of adding the MD field to headers of IFA sampling packets is not configured by default.
Command Mode	Interface configuration mode
Default Level	14
Usage Guide	This command is used in combination with the global command **ifa set-header md**. This command is mutually exclusive to the **ifa set-header md** command used in interface configuration mode, where the latter command is used to disable the MD field adding function on an interface that does not need the function.

Configuration Examples	The following example disables the function of adding the MD field to headers of IFA sampling packets on interface TenGigabitEthernet 0/16.
	`Ruijie(config)# ifa set-header md`
	`Ruijie(config-if-TenGigabitEthernet 0/16)# ifa passive md`

Verification	Run the **show run** command to check whether the configuration is successful.
Prompt Message	N/A
Common Errors	N/A
Platform Description	N/A

11.6 ifa send-server

Use this command to configure the name of the server to which IFA packets of an interface are to be sent, and ACL rules. Use the **no** form of this command to delete the IFA packet transmission configuration of an interface. Use the **default** form of this command to restore the default settings.

ifa send-server *server-name* [**acl** *id* | *name*]

no ifa send-server

default ifa send-server

Parameter Description

Parameter	Description
server-name	Indicates the name of an IFA server.
id	ACL ID

name	ACL name

Defaults IFA packets are not sent by default.

Command Mode Interface configuration mode

Default Level 14

Usage Guide This command can be configured only on physical ports and APs. Packets can be sent to the IFA server only after the IP address of the IFA server is configured. IFA packets of the same interface can be sent only to the same server.
The ACL rule is optional configuration. All the IFA packets on the interface will be sent to the server when no ACL rule is configured. To send the IFA packets matching the ACL rule to the specified server, configure the ACL rule first, and then apply the rule on the interface.

Configuration Example The following example sends IFA packets of the TenGigabitEthernet 0/16 interface to the IFA server named server1.

```
Ruijie(config-if-TenGigabitEthernet 0/16)# ifa send-server
server1
```

Verification Run the **show run** command to check the IFA packet transmission configuration of the interface.

Prompt N/A

Common Errors N/A

Platform Description N/A

11.7 ifa server

Use this command to configure an IFA server. Use the **no** form of this command to delete the IFA server configuration. Use the **default** form of this command to restore the default settings.
ifa server *server-name* **source** *ip-address* **port** *udp-port* **destination** *ip-address* **port** *udp-port*
no ifa server *server-name*
default ifa server *server-name*

Parameter

Parameter	Description

Description

server-name	Indicates the name of an IFA server.
ip-address	Indicates the source and destination IPv4 addresses of IFA encapsulated packets.
udp-port	Indicates the source and destination port IDs of IFA packets.

Defaults N/A

Command Mode Global configuration mode

Default Level 14

Usage Guide This command is used to configure the source and destination addresses of IFA encapsulated packets. The addresses can be host addresses only. When a non-host address (such as a multicast address or broadcast address) is configured, a configuration failure occurs. The IFA server listens to a configured port.

Configuration Example The following example sets the IP address of the IFA server named server1 to 192.168.2.101 and configures the server to listen to port 2000.

```
Ruijie(config)# ifa server server1 source 192.168.2.100 port 1000
destination 192.168.2.101 port 2000
```

Verification Run the **show run** command to check whether the command is configured.

Prompt An error is displayed if the configured address is invalid.

```
invalid host address.
```

Common Errors N/A

Platform Description N/A

11.8 ifa set-device

Use this command to configure the address of an IFA device. Use the **no** form of this command to delete the address of an IFA device. Use the **default** form of this command to restore the default settings.

ifa set-device *ip-address*

no ifa set-device

default ifa set-device

Parameter

Parameter	Description

Description		
	ip-address	Indicates the IPv4 address of an IFA device.

Defaults The address of an IFA device is not configured by default.

Command Mode Global configuration mode

Default Level 14

Usage Guide N/A

Configuration Example The following example sets the IP address of an IFA device to 192.168.2.100.

```
Ruijie(config)# ifa set-device 192.168.2.100
```

Verification Run the **show run** command to check whether the command is configured.

Prompt N/A

Common Errors N/A

Platform Description N/A

11.9 ifa set-header md

Use this command to add the MD field to the header of IFA sampling packets. Use the **no** form of this command to delete the configuration of adding the MD field to the header of IFA sampling packets. Use the **default** form of this command to restore the default settings.

ifa set-header md

no ifa set-header md

default ifa set-header md

Parameter Description	Parameter	Description
	N/A	N/A

Defaults No MD field is added to the header of IFA sampling packets by default.

Command Interface configuration mode, global configuration mode

Mode

Default Level 14

Usage Guide In interface configuration mode, this command is used to enable the function of adding the MD field to headers of IFA sampling packets on an interface. It can be configured only on physical ports and APs. After this command is configured on an interface, no interface can be configured with the **ifa passive md** command.

When this command is configured globally, the function of adding the MD field to headers of IFA sampling packets is enabled on all physical ports and APs. If this function needs to be disabled on some interfaces, run the **ifa passive md** command on these interfaces.

The configuration in interface configuration mode is mutually exclusive to that in global configuration mode. That is, the command cannot be configured globally after it is configured on an interface, and vice versa.

The **ifa set-header md** command needs to be configured on all layer-3 intermediate devices that forward IFA sampling packets. Otherwise, the IFA sampling packets may not be re-encapsulated nor sent to the server, or the packets may be incomplete even if they reach the server. When matching rules are needed, expert-level ACLs must be configured. After this command is configured, the MD field will be added to headers of packets matching the ACLs.

Configuration Example The following example adds the MD field to the header of IFA sampling packets on the TenGigabitEthernet 0/15 interface.

```
Ruijie(config)#access-list 2701 permit icmp any any any any
Ruijie(config)#interface TenGigabitEthernet 0/15
Ruijie(config-if-TenGigabitEthernet 0/15)# ifa set-header md acl
2701
```

Verification Run the **show run** command to check whether the command is configured.

Prompt N/A

Common Errors N/A

Platform Description N/A

11.10 ifa set-loopback interface

Use this command to configure an IFA loopback interface. Use the **no** form of this command to delete the configured IFA loopback interface. Use the **default** form of this command to restore the default settings.

ifa set-loopback interface *interface-name*
no ifa set-loopback interface *interface-name*
default ifa set-loopback interface *interface-name*

Parameter Description	Parameter	Description
	interface-name	Specifies an interface name.

Defaults No IFA loopback interface is configured by default.

Command Mode Global configuration mode

Default Level 14

Usage Guide This command can be configured only on physical ports.

Configuration Example The following example configures TenGigabitEthernet 0/1 as the IFA loopback interface.

```
Ruijie(config)# ifa set-loopback interface TenGigabitEthernet 0/1
```

Verification Run the **show run** command to check whether the command is configured.

Prompt N/A

Common Errors N/A

Platform Description N/A

11.11 show ifa config

Use this command to display the IFA configuration.
show ifa config

Parameter Description	Parameter	Description
	N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Example The following example displays the IFA configuration.

```
Ruijie# show ifa config
Sampling ifa configure table
Current ifa md-mode: TH2  (Next reboot: TH3)
ifa set-device 192.168.2.1
ifa set-loopback interface TFGigabitEthernet 0/3
ifa server 1 source 192.168.2.100 port 1000 destination
172.30.69.200 port 2000
ifa host-port acl 103
IFA interface config information
IFA is applied on TFGigabitEthernet 0/1
ifa set-header md acl 2701
ifa send-server 1 acl 2702
ifa acl 101 rate 100
ifa acl 102 rate 1
ifa host-port
IFA is applied on TFGigabitEthernet 0/2
ifa filter enable
```

Verification N/A

Prompt N/A

Common Errors N/A

Platform Description N/A

11.12 show ifa statistics

Use this command to display IFA statistics.

show ifa statistics

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Example The following example displays IFA statistics.

```
Ruijie# show ifa statistics
Type          Acl    Statistic(pkts)        Applied interface
-------------------------------------------------------------------
---------------------------------
sample-to-cpu   100    20426                TF0/1, TF0/3-4,
TF0/29-34, TF0/39, TF0/43, TF0/45,
                                          TF0/47, Hu0/49, Hu0/51,
Hu0/53, Hu0/55, Ag255
sample-to-cpu   101    0                    TF0/2
insert-md      -      20586                Hu0/49
```

Field description:

Field	Description
type	Type of statistics
acl	Applied ACL
statistic	Packet statistics
applied interface	Applied interface

Verification N/A

Prompt N/A

Common Errors N/A

Platform Description N/A

12 PSR Commands

12.1 clear psr statistics

Use this command to clear the PSR statistics.

clear psr statistics

Parameter Description	**Parameter**	**Description**
	N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide N/A

Configuration Example The following example clears the PSR statistics.

```
Ruijie(config)# clear psr statistics
```

Verification Run the **show psr statistics** command to display the PSR statistics.

Prompt N/A

Common Errors N/A

Platform Description N/A

12.2 psr collect-interface

Use this command to configure the number of interfaces whose sampling information is to be encapsulated into PSR packets. Use the **no** form of this command to delete the configured number of interfaces whose sampling information is to be encapsulated into PSR packets. Use the **default** form of this command to restore the default settings.

psr collect-interface *numbers*

no psr collect-interface
default psr collect-interface

Parameter Description

Parameter	Description
numbers	Indicates the interface quantity. The value ranges from **1** to **100**, and the default value is **1**.

Defaults The default number of interfaces is 1.

Command Mode Global configuration mode

Default Level 14

Usage Guide This command is used to configure the number of interfaces whose sampling information is to be encapsulated into PSR packets.

Configuration Example The following example sets the number of interfaces whose sampling information is to be encapsulated into PSR packets to 50.

```
Ruijie(config)# psr collect-interface 50
```

Verification Run the **show run** command to check whether the number of interfaces whose sampling information is to be encapsulated into PSR packets is configured correctly.

Prompt N/A

Common Errors N/A

Platform Description N/A

12.3 psr interval

Use this command to configure the time interval for PSR sampling. Use the **no** form of this command to delete the configured time interval of PSR sampling. Use the **default** form of this command to restore the default settings.
psr interval *seconds*
no psr interval
default psr interval

Parameter Description

Parameter	Description

seconds	Indicates the time interval, in seconds. The value ranges from **1** to **100** and the default value is **5**.

Defaults The default time interval is 5s.

Command Mode Global configuration mode

Default Level 14

Usage Guide This command is used to configure the global time interval for PSR sampling. The PSR sampling of all interfaces uses this sampling interval.

Configuration Example The following example sets the time interval for PSR sampling to 60s.

```
Ruijie(config)# psr interval 60
```

Verification Run the **show run** command to check whether the time interval for PSR sampling is configured.

Prompt N/A

Common Errors N/A

Platform Description N/A

12.4 psr send-server

Use this command to configure the name of the server to which PSR packets of an interface are to be sent. Use the **no** form of this command to delete the PSR packet transmission configuration of an interface. Use the **default** form of this command to restore the default settings.

psr send-server *server-name*

no psr send-server

default psr send-server

Parameter Description

Parameter	Description
server-name	Indicates the name of a PSR server.

Defaults PSR packets are not sent by default.

Command Interface configuration mode

Mode

Default Level 14

Usage Guide This command can be configured only on physical ports and APs. Packets can be sent to the PSR server only after the IP address of the PSR server is configured. PSR packets of the same interface can be sent only to the same server.

Configuration Example The following example sends PSR packets of the TenGigabitEthernet 0/16 interface to the PSR server named server1.

```
Ruijie(config-if-TenGigabitEthernet 0/16)# psr send-server
server1
```

Verification Run the **show run** command to check the PSR packet transmission configuration of the interface.

Prompt N/A

Common Errors N/A

Platform Description N/A

12.5 psr server

Use this command to configure a PSR server. Use the **no** form of this command to delete the PSR server configuration. Use the **default** form of this command to restore the default settings.

psr server *server-name* **source** *ip-address* **port** *udp-port* **destination** *ip-address* **port** *udp-port*

no psr server *server-name*

default psr server *server-name*

Parameter Description

Parameter	Description
server-name	Indicates the name of a PSR server.
ip-address	Specifies the source and destination IPv4 addresses of PSR encapsulated packets.
udp-port	Indicates the source and destination port IDs of PSR packets.

Defaults N/A

Command Mode	Global configuration mode
Default Level	14
Usage Guide	This command is used to configure the source and destination addresses of PSR encapsulated packets. The addresses can be host addresses only. When a non-host address (such as a multicast address or broadcast address) is configured, a configuration failure occurs. The PSR server listens to a configured port.
Configuration Example	The following example sets the IP address of the PSR server named server1 to 192.168.2.101 and configures the server to listen to Port 2000. `Ruijie(config)# psr server server1 source 192.168.2.100 port 1000 destination 192.168.2.101 port 2000`
Verification	Run the **show run** command to check whether the command is configured.
Prompt	An error is displayed if the configured address is invalid. `invalid host address.`
Common Errors	N/A
Platform Description	N/A

12.6 show psr statistics

Use this command to display PSR statistics.

show psr statistics

Parameter Description

Parameter	Description
N/A	N/A

Defaults	N/A
Command Mode	Privileged EXEC mode, global configuration mode, and interface configuration mode
Default Level	14
Usage Guide	N/A

Configuration Example The following example displays PSR statistics.

```
Ruijie# show psr statistics
Server id     Name    Statistic(pkts)        Applied interface
-------------------------------------------------------------------
---------------------------------
1            aaa     20426               Hu1/1-9
2            bbb     1000                Hu16/1-16
```

Field description:

Field	Description
Server id	Server ID
name	Server name
statistic	Packet statistics
applied interface	Applied interface

Verification N/A

Prompt N/A

Common Errors N/A

Platform Description N/A

Data Center Commands

1. DCB Commands
2. VXLAN Commands
3. RDMA Commands

1 DCB Commands

1.1 clear priority-flow-control deadlock statistics interface

Use this command to clear the PFC deadlock statistics of an interface.

clear priority-flow-control deadlock statistics [**interface** *interface*]

Parameter Description

Parameter	Description
interface	Indicates an interface name.

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide This command is used to clear the PFC deadlock statistics of an interface.

Configuration Examples The following example clears PFC deadlock statistics of all priorities of all interfaces.

```
Ruijie#clear priority-flow-control deadlock statistics
```

The following example clears PFC deadlock statistics of all priorities of a specified interface.

```
Ruijie#clear priority-flow-control deadlock statistics interface
tenGigabitEthernet 0/1
```

1.2 clear priority-flow-control statistics

Use this command to clear the PFC statistics.

clear priority-flow-control statistics [**interface** *intf-name*]

Parameter Description

Parameter	Description
intf-name	Interface name

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide If the intf-name 1 parameter is not defined, the PFC statistics of all ports is cleared.

Configuration The following example clears the PFC statistics of the interface FastEthernet 0/1:

Examples

```
Ruijie# clear interface FastEthernet 0/1 priority-flow-control
statistics
```

#Show the statistics:

```
Ruijie# show interface FastEthernet 0/1 priority-flow-control
statistics
Interface PriorityEnabledPFC PauseSended PauseReceived
--------- ------------------ ----------- ------------
Fa 0/1    3                  0           0
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.3 dcbx advertise

Use this command to enable DCBX TLV release on an interface. Use the **no** form or **default** form of this command to disable or restore DCBX TLV release.

dcbx { **app-proto | pfc** } **advertise**

no dcbx { **app-proto | pfc** } **advertise**

default dcbx { **app-proto | pfc** } **advertise**

Parameter Description

Parameter	Description
app-proto	Controls DCBX TLV release specific to APP capability.
pfc	Controls DCBX TLV release specific to PFC capability.

Defaults All DCBX TLVs can be released.

Command Mode Interface configuration mode

Usage Guide The following conditions must be met:

LLDP is enabled at both interface and global levels.

Interface LLDP works in txrx mode.

The interface supports the relevant DCB capability.

Interface DCBX is enabled.

Interface-specific DCBX TLVs can be released.

Configuration Examples N/A

Related Commands

Command	Description
show dcbx status	Displays the DCBX TLV type allowed to be released on each interface.

Platform Description N/A

1.4 dcbx enable

Use this command to enable DCBX on an interface. Use the **no** form or **default** form of this command to disable or restore DCBX.

dcbx enable

no dcbx enable

default dcbx enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults The DCBX is enabled by default.

Command Mode Global configuration mode/Interface configuration mode

Usage Guide Enable DCBX in global or interface configuration mode to launch the DCB capability negotiation of the interface. Disabling the global DCBX function will disable the DCB capability negotiation of all interfaces.

To make the DCBX negotiation of an interface take effect, the following conditions must be met:

1) LLDP is enabled at both interface and global levels.
2) Interface LLDP works in txrx mode.
3) Interface-specific DCB TLVs can be released.
4) The interface supports the relevant DCB capability.
5) Global and interface DCBX are enabled.

The LLDP enable and work mode configuration of the AP member interface will affect the DCBX protocol of the corresponding AP interface.

During the configuration of the AP interface, ensure that the LLDP configurations of all AP member interfaces are consistent, the topology connection of the AP interface is correct, and the DCBX TLVs released by all AP member interfaces

are the same. Otherwise, the DCB capability negotiation of both ends of the AP interface will be abnormal.

Configuration Examples This example shows how to disable the DCBX protocol on GigabitEthernet 0/1:

```
Ruijie#config
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if)#no dcbx enable
```

Related Commands

Command	Description
show dcbx status	Displays the DCBX protocol enable state of each interface.

Platform Description N/A

1.5 dcbx mode

Use this command to configure the DCBX mode of the interface. Use the **no** or **default** form of this command to restore the default DCBX mode.

dcbx mode { **auto | cee | ieee** }

no dcbx mode

default dcbx mode

Parameter Description

Parameter	Description
auto	Auto-switches the DCBX mode according the DCBX TLV type received on the interface. The default mode is CEE-DCBX.
cee	Specifies the DCBX mode to CEE-DCBX.
ieee	Specifies the DCBX mode to IEEE-DCBX.

Defaults The default DCBX mode is auto, and the CEE-DCBX is effective.

Command Mode Interface configuration mode

Usage Guide The following conditions must be met:

1. LLDP is enabled at both interface and global levels.

Interface LLDP works in txrx mode.

Interface-specific DCB TLVs can be released.

The interface supports the relevant DCB capability.

Interface DCBX is enabled.

If the interface DCBX mode is auto, the CEE-DCBX takes effect and then the interface automatically switches the DCBX mode according the DCBX TLV type received.
If the interface DCBX mode is cee, the CEE-DCBX takes effect, but the interface does not switch the DCBX mode based on the DCBX TLV type received.
If the interface DCBX mode is ieee, the IEEE-DCBX takes effect, but the interface does not switch the DCBX mode based on the DCBX TLV type received.

Configuration Examples This example shows how to configure the ieee DCBX mode on GigabitEthernet 0/1:

```
Ruijie#config
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if)#dcbx mode ieee
```

Related Commands

Command	Description
show dcbx status	Displays the DCBX status of each interface.

Platform Description N/A

1.6 dcbx willing

To enable the acceptation of the peer DCB configuration, use the **dcbx** { **app-proto | ets | pfc** } **willing enable** command. To disable or restore the acceptation of the peer DCB configuration, use the **no** form or **default** form of this command.
dcbx { **app-proto** | **pfc** } **willing enable**
no dcbx { **app-proto** | **pfc** } **willing enable**
default dcbx { **app-proto** | **pfc** } **willing**

Parameter Description

Parameter	Description
app-proto	Controls the synchronous acceptation of the peer configuration of APP capability.
pfc	Controls the synchronous acceptation of the peer configuration of PFC capability.

Defaults The local end does not accept the peer configuration, that is, the willing bit is 0.

Command Mode Interface configuration mode

Usage Guide If the local end is unwilling to accept the peer configuration, disable the willing setting. Otherwise, enable it. The following conditions must be met:
LLDP is enabled at both interface and global levels.
Interface LLDP works in txrx mode.
The interface supports the relevant DCB capability.
Interface DCBX is enabled.
Interface-specific DCBX TLVs can be released.

⚠ When the willing settings are the same on the two ends, the configuration of the end with a less MAC address serves as the synchronization configuration if both ends accept the peer configuration. If neither end accepts the peer configuration, the same configuration indicates successful negotiation and different configurations indicate failed negotiation.

⚠ The DCB capability that supports global configuration instead of interface configuration cannot be negotiated through DCBX, and the local configuration serves as the synchronization configuration. For example, if PFC supports global configuration instead of interface configuration, PFC capability negotiation cannot be performed even if the local PFC willing bit is 1, and the local PFC configuration serves as the final synchronization configuration.

Configuration Examples N/A

Related Commands

Command	Description
show dcbx status	Displays the willing setting of DCB capability specific to each interface.

Platform Description N/A

1.7 priority-flow-control counting-interval

Use this command to configure the global PFC statistics collection interval. Use the **no** form of this command to cancel the configured global PFC statistics collection interval.
priority-flow-control counting-interval *number*
no priority-flow-control counting-interval [*number*]

Parameter Description

Parameter	Description
number	Indicates the statistics collection interval in seconds. The value ranges from **1** to **20**.

Defaults The default global PFC statistics collection interval is 5 seconds.

Command Mode Global configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example configures the global PFC statistics collection interval to 10 seconds.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# priority-flow-control counting-interval 10
```

Verification Run the **show running-config** command to display the configuration.

```
Ruijie#show running-config
```

1.8 priority-flow-control deadlock cos-value

Use this command to configure attributes of the PFC deadlock detection function for a PFC priority. Use the **no** form of this command to cancel configured attributes of the PFC deadlock detection function for a PFC priority.

priority-flow-control deadlock cos-value *cos-value-list* [**detect** *detect-time* **recover** *recover-time* [**continue | backoff** *most-times*]]

no priority-flow-control deadlock cos-value [*cos-value-list* **detect** *detect-time* **recover** *recover-time* [**continue | backoff** *most-times*]]

Parameter Description

Parameter	Description
cos-value-list	Indicates the priority list. The priority ranges from **0** to **7**.
detect-time	Indicates the deadlock detection time in time slices. The value ranges from **1** to **15**. The default value is **15**.
recover-time	Indicates the deadlock recovery time in milliseconds. The value ranges from **10** to **3000**. The default value is **15**.
continue	Indicates the continue algorithm used to calculate the deadlock recover-time.
backoff *most-times*	Indicates the backoff algorithm used to calculate the deadlock recover-time. *most-times* indicates the maximum number of backoff times. The value ranges from **2** to **100**.

Defaults N/A

Command Global configuration mode

Mode

Default Level 14

Usage Guide 1. The PFC deadlock detection function detects whether an interface at a PFC priority enters the **PFC deadlock** state. When it is detected that the interface enters the PFC deadlock state, the interface forwards or discards received packets within a period of time. You can run the **priority-flow-control deadlock drop** command to configure the packet processing mode.

2. You can use this command to configure attributes of the PFC deadlock detection function for PFC priorities. The default values are used if not specified. The configuration of one or two priorities is available. Up to two priorities are supported.

3. *detect-time*: Indicates the time for determining whether an interface at a PFC priority enters the PFC deadlock state. When the interface stays in the PFC congested state in consecutive detect-time periods, it indicates that the interface enters the PFC deadlock state. The default value is used if not specified.

4. *recover-time:* indicates the allowed packet processing time after an interface at a PFC priority enters the PFC deadlock state. The default value is 150ms if not specified.

5. *detect-time* is in unit of time slice. You can run the **priority-flow-control deadlock precision low** command to configure the length of one time slice. *recover-time* is in unit of milliseconds.

6. **continue**: Indicates that an interface of the priority in the deadlock state continues in this state for one recover-time period if it receives PFC PAUSE frames. The interface checks whether it receives PFC PAUSE frames in the next recover-time period. If the interface still receives such frames, it continues to be in the deadlock state for another recover-time period. The process repeats till the interface does not receive PFC PAUSE frames within the recover-time period and then the interface exits the deadlock state.

7. *most-times*: indicates the maximum number of recover-time backoff times . If an interface enters the deadlock state within the backoff period (recover-time x most-times) after it recovers from the first deadlock, the backoff time needs to be added to the recover-time (Backoff time = Number of backoff times x recover-time). If the interval between two deadlock states exceeds the backoff period, the number of backoff times is reset to zero. Otherwise, the number of backoff times increases by 1 (if the number of backoff times already reaches the maximum number of backoff times, the maximum number of backoff times, that is, most-times, is used.)

8. If neither **continue** nor **backoff** is configured, the deadlock recover-time algorithm is disabled. After the deadlock recover-time ends, the interface directly exits the deadlock state.

Configuration Examples The following example sets the PFC deadlock detection time to 15 time slices and packet processing time to 10ms for the PFC priorities of 1 and 2.

```
Ruijie# configure terminal
```

```
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# priority-flow-control deadlock cos-value 1,2
detect 15 recover 10
```

The following example configures interfaces of PFC priorities 1 and 2 in the deadlock state to exit the deadlock state only when they do not receive PFC PAUSE frames within the recover-time

```
Ruijie(config)# priority-flow-control deadlock cos-value 1,2
detect 15 recover 10 continue
```

The following example uses the backoff algorithm to calculate the deadlock recover-time for interfaces of PFC priorities 1 and 2 and sets the maximum number of backoff times to 10.

```
Ruijie(config)# priority-flow-control deadlock cos-value 1,2
detect 15 recover 10 backoff 10
```

Verification Run the **show running-config** command to display the configuration.

```
Ruijie#show running-config
```

Common Errors N/A

1.9 priority-flow-control deadlock cos-value enable

Use this command to enable the PFC deadlock detection function on an interface for a priority. Use the **no** form of this command to disable the PFC deadlock detection function on an interface for a priority.

priority-flow-control deadlock cos-value *cos-value-list* **enable**

no priority-flow-control deadlock cos-value *cos-value-list* **enable**

Parameter Description

Parameter	Description
cos-value-list	Indicates the priority list. The priority ranges from **0** to **7**.

Defaults The PFC deadlock detection function is disabled on an interface for all priorities by default.

Command Mode Interface configuration mode

Default Level 14

Usage Guide 1. When the **priority-flow-control deadlock cos-value detect recover** command is not executed to globally configure the PFC deadlock detection function for a priority, the PFC deadlock detection function cannot be enabled on interfaces for the priority.

2. Likewise, if the **priority-flow-control deadlock cos-value detect recover**

command, the PFC deadlock detection function will be disabled on all interfaces for the priority.

Configuration Examples The following example enables the PFC deadlock detection function for PFC Priorities 1 and 2 of interface TenGigabitEthernet 0/1.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#interface tenGigabitEthernet 0/1
Ruijie(config-if-TenGigabitEthernet 0/1)#priority-flow-control
deadlock cos-value 1,2 enable
```

Verification Run the **show running-config** command to display the configuration.

```
Ruijie#show running-config interface tenGigabitEthernet 0/1
```

Prompts When the PFC deadlock detection function is not globally configured for a priority, the PFC deadlock detection function cannot be enabled on an interface for the priority.

```
Ruijie(config-if-tenGigabitEthernet 0/1)#priority-flow-control
deadlock cos-value 1,2 enable
%Global priority-flow-control deadlock cos-value is not configured.
```

Common Errors The PFC deadlock detection function is not globally configured for a priority or the PFC function is not globally enabled for a priority in advance.

Platform Description N/A

1.10 priority-flow-control deadlock drop

Use this command to globally configure the function of discarding packets by an interface in the PFC deadlock state. Use the **no** form of this command to cancel the function of discarding packets by an interface in the PFC deadlock state.

priority-flow-control deadlock drop

no priority-flow-control deadlock drop

Parameter Description

Parameter	Description
N/A	N/A

Defaults An interface in the PFC deadlock state forwards packets by default when this command is not configured.

Command Mode Global configuration mode

Default Level 14

Usage Guide If this command is not configured, an interface at a PFC priority forwards packets after

entering the PFC deadlock state.
If this command is configured, an interface at a PFC priority discards packets after entering the PFC deadlock state.

Configuration Examples This following example globally configures the function of discarding packets by an interface in the PFC deadlock state.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# priority-flow-control deadlock drop
```

Verification Run the **show running-config** command to display the configuration.

```
Ruijie#show running-config
```

1.11 priority-flow-control deadlock limit cos-value enable

Use this command to enable the PFC deadlock threshold function for a PFC priority. Use the **no** form of this command to disable the PFC deadlock threshold function for PFC priority.
priority-flow-control deadlock limit cos-value *cos-value-list* **enable**
no priority-flow-control deadlock limit cos-value [*cos-value-list* **enable**]

Parameter Description

Parameter	Description
cos-value-list	Indicates the priority list. The priority ranges from **0** to **7**.

Defaults N/A

Command Mode Global configuration mode

Default Level 14

Usage Guide 1. This command is not configured by default. Configuring this command will enable the PFC deadlock threshold function for the PFC priority corresponding to *cos-value-list*. If the number of deadlock times occurring for a priority within one detection period (1 minute by default) reaches the threshold (10 times by default), the PFC function is disabled for the priority via the **priority-flow-control nodrop** *cos-value-list* **off** command.
2. This command relies on the configuration of the **priority-flow-control deadlock cos-value** *cos-value-list* **detect** *detect-time* **recover** *recover-time* command. This command can be configured only after the command for configuring attributes of the PFC deadlock detection function is configured for a priority. Likewise, if the command for configuring attributes of the PFC deadlock detection function is deleted for a priority,

the PFC deadlock threshold command of the priority is also deleted.
3. You can run the **priority-flow-control deadlock limit frequency** *number* **period** *time* command to configure the detection period and deadlock threshold.

Configuration Examples The following example enables the PFC deadlock threshold function for PFC Priority 2.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# priority-flow-control deadlock limit cos-value 2
enable
```

Verification Run the **show running-config** command to display the configuration.

```
Ruijie#show running-config
```

Common Errors The attributes of the PFC deadlock detection function are not configured for a priority.

1.12 priority-flow-control deadlock limit frequency period

Use this command to configure the PFC deadlock threshold and detection period. Use the **no** form of this command to cancel the configured PFC deadlock threshold and detection period.
priority-flow-control deadlock limit frequency *number* **period** *time*
no priority-flow-control deadlock limit frequency [*number* **period** *time*]

Parameter Description

Parameter	Description
number	Indicates the PFC deadlock threshold. The value ranges from 10 times to 100,000 times and the default value is 10 times.
time	Indicates the PFC deadlock detection period. The value ranges from 1 min to 5 min and the default value is 1 min.

Defaults The default PFC deadlock detection period is 1 min and the default PFC deadlock threshold is 10 times.

Command Mode Global configuration mode

Default Level 14

Usage Guide 1. This command modifies the PFC deadlock threshold and detection period. When the **priority-flow-control deadlock limit cos-value** *cos-value-list* **enable** command is executed to enable the PFC deadlock threshold function for a PFC priority, the PFC deadlock threshold and detection period configured using this command are applied.

Configuration Examples The following example sets the PFC deadlock threshold to 100 and detection period to 5 min.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# priority-flow-control deadlock limit frequency 100
period 5
```

Verification Run the **show running-config** command to display the configuration.

```
Ruijie#show running-config
```

1.13 priority-flow-control deadlock precision low

Use this command to set the PFC deadlock time precision to low.
priority-flow-control deadlock precision low

Use the **no** form of this command to cancel the configured low PFC deadlock time precision.
no priority-flow-control deadlock precision low

Parameter Description

Parameter	Description
N/A	N/A

Defaults The default deadlock time precision is high (10 ms). This command sets the deadlock time precision to low (100 ms).

Command Mode Global configuration mode

Default Level 14

Usage Guide

1. This command is used to configure the length of a single deadlock time slice. It affects the time unit of *detect-time* in the **priority-flow-control deadlock cos-value** *cos-value-list* **detect** *detect-time* **recover** *recover-time* command.
2. When this command is not configured, the PFC deadlock time precision is high (one time slice equals 10 ms).
3. After the PFC deadlock function is configured for a priority, configuring this command will modify the time precision of the PFC deadlock function for the priority.

Configuration Examples The following example sets the PFC deadlock time precision to low.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
```

```
Ruijie(config)# priority-flow-control deadlock precision low
```

Verification Run the **show running-config** command to display the configuration.

```
Ruijie#show running-config
```

Prompts N/A

Platform Description N/A

1.14 priority-flow-control rx disable

Use this command to disable the PFC RX function. Use the **no** form of this command to enable the PFC RX function.

priority-flow-control rx disable

no priority-flow-control rx disable

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, the PFC RX function is enabled.

Command Mode Global or interface configuration mode

Default Level 14

Usage Guide

1. Use this command to configure the PFC RX function. By default, the PFC RX function is enabled.
2. This command can be configured in global or interface configuration mode depending on the chip capability. When the PFC RX function supports the global configuration capability, the command is unavailable on interfaces.
3. When the PFC RX function supports the interface configuration capability, the command can be configured in global configuration mode and the configuration can be saved to each interface. The configuration is displayed only on interfaces.

Configuration Examples The following example disables the PFC RX function globally.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# priority-flow-control rx disable
```

Verification Run the **show running-config** command to display the configuration.

```
Ruijie#show running-config
```

1.15 priority-flow-control tx disable

Use this command to disable the PFC TX function. Use the no form of this command to enable the PFC TX function.

priority-flow-control tx disable

no priority-flow-control tx disable

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, the PFC TX function is enabled.

Command Mode Global or interface configuration mode

Default Level 14

Usage Guide 1. Use this command to configure the PFC TX function. By default, the PFC TX function is enabled.

2. This command can be configured in global or interface configuration mode depending on the chip capability. When the PFC TX function supports the global configuration capability, the command is unavailable on interfaces.

3. When the PFC TX function supports the interface configuration capability, the command can be configured in global configuration mode and the configuration can be saved to each interface. The configuration is displayed only on interfaces.

Configuration Examples The following example disables the PFC TX function globally.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# priority-flow-control tx disable
```

Verification Run the **show running-config** command to display the configuration.

```
Ruijie#show running-config
```

1.16 priority-flow-control xoff-time

Use this command to configure the value of **XOFF-TIME** in a PFC frame. Use the **no** form of this command to restore the default value.

priority-flow-control xoff-time *number*

no priority-flow-control xoff-time [*number*]

Parameter Description

Parameter	Description
number	Value of **XOFF-TIME** in a PFC frame, ranging from **1** to **65535** (The unit of **XOFF-TIME** is the time required by the chip to send 512-bit data at the physical layer.)

Defaults The default value of **XOFF-TIME** in a PFC frame is **65535**.

Command Mode Global or interface configuration mode

Default Level 14

Usage Guide

1. Use this command to configure the value of **XOFF-TIME** in a PFC frame.
2. This command can be configured in global or interface configuration mode depending on the chip capability. When the PFC frame XOFF-TIME function supports the global configuration capability, the command is unavailable on interfaces.
3. When the PFC frame XOFF-TIME function supports the interface configuration capability, the command can be configured in global configuration mode and the configuration can be saved to each interface. The configuration is displayed only on interfaces.

Configuration Examples The following example sets the value of **XOFF-TIME** in a PFC frame to **100** globally.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# priority-flow-control xoff-time 100
```

Verification Run the **show running-config** command to display the configuration.

```
Ruijie#show running-config
```

1.17 priority-flow-control early-warning

Use this command to configure the flow rate warning for a priority of an interface. Use the **no** form of this command to cancel the configured flow rate warning for a priority of an interface.

priority-flow-control early-warning *cos-value-list* **{ output pps** *rate-num*] **| input pps** *rate-num***}**

no priority-flow-control early-warning *cos-value-list* **{ output** [**pps** *rate-num*] **| input** [**pps** *rate-num*] **}**

Parameter

Parameter	Description

Description

cos-value-list	Indicates the priority value. The value ranges from **0** to **7**.
rate-num	Indicates the flow rate warning value. The value ranges from **1** to **148809523**.

Defaults The flow rate warning is disabled by default.

Command Mode Interface configuration mode

Default Level 14

Usage Guide 1. This command configures the warning function for a PFC priority of an interface. When the rate of Pause frames exceeds the configured threshold, a warning is generated.
2. A flow rate warning threshold can be configured in each of the input and output directions in unit of pps (packets per second).

Configuration Examples The following example configures the flow rate warning function in the output direction for PFC Priority 1 of Interface TenGigabitEthernet 0/1 and sets the warning threshold to 1000 pps.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#interface tenGigabitEthernet 0/1
Ruijie(config-if-TenGigabitEthernet 0/1)#priority-flow-control
early-warning 1 output pps 1000
```

Verification Run the **show running-config** command to display the configuration.

```
Ruijie#show running-config
```

1.18 priority-flow-control nodrop

Use this command to disable priority-based flow control (PFC).
priority-flow-control nodrop *cos-value-list* **off**
Use this command to enable PFC.
priority-flow-control nodrop *cos-value-list* **on**

Parameter Description

Parameter	Description
cos-value-list	Priority list. The **cos** value ranges from **0** to **7**.

Defaults By default, the PFC function is disabled.

Command Interface or global configuration mode

Mode

Usage Guide Range of *cos-value-list* : 0 to 7. The format of *cos-value-list* is 1,3,4,5 or 1, 3-5.

Configuration Examples The following example enables PFC for the 802.1p priority of 1, 3, 4, 5 in global configuration mode.

```
Ruijie(config)# priority-flow-control nodrop 1,3,4,5 on
```

The following example enables PFC for the 802.1p priority of 1, 3, 4, 5 in interface configuration mode.

```
Ruijie(config-if)# priority-flow-control nodrop 1,3,4,5 on
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.19 show dcbx status

To display the DCBX protocol enable state of each interface, use the **show dcbx control** command.

show dcbx status [**interface** *interface-name*]

Parameter Description

Parameter	Description
interface-name	Interface name

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Specify the interface parameter and the DCBX enable state of the specified interface will be shown.

Configuration Examples This example shows how to display the DCBX enable state of a specified interface:

```
Ruijie#show dcbx status interface tenGigabitEthernet 0/1
Global------
------------------------------------------------------------
Port [TenGigabitEthernet 1/1]
------------------------------------------------------------
Local managing configuration information and port link state:
Port status of DCBX                          : Enable
```

```
PFC is allowed to advertise                  : Yes
APP is allowed to advertise                  : Yes
PFC is willing to accept peer configuration  : Yes
APP is willing to accept peer configuration  : No
Port link state                               : UP
```

Negotiated configuration information:

```
PFC negotiated result    : using peer configuration
APP negotiated result    : detecting misconfiguration
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.20 show dcbx information

To display the configuration information specific to DCB capability negotiation of each interface, use the **show dcbx information** command.

show dcbx information { **ets | app-proto** } [**interface** *interface-name*]

Parameter Description

Parameter	Description
pfc	Displays the configuration information specific to PFC capability negotiation.
app-proto	Displays the configuration information specific to APP capability negotiation.
interface-name	Interface name

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Specify the interface parameter and the configuration information specific to DCB capability negotiation of the specified interface will be shown.

Configuration Examples This example shows how to display the configuration information specific to PFC capability negotiation of a specified interface:

```
Ruijie#show dcbx information pfc interface gigabitethernet 0/1
DCBX pfc – Enabled state, Willing state and Error state
```

```
=========================================================
      Interface       Local En/Will/Err  Peer En/Will/Err
------------------- ----------------- --------------------
GigabitEthernet 0/1   Y/N/N              Y/N/N

         DCBX pfc - Port Priority Capability
=====================================================
      Interface        CapLoc CapPeer
----------------------- ------ -------
GigabitEthernet 0/1     3     3

      DCBX pfc - Port Priority Flow Control Table
=====================================================
      Interface      Priority EnLoc EnPeer EnOper
------------------- -------- ----- ------ ------
GigabitEthernet 0/1   0        Yes    Yes    Yes
GigabitEthernet 0/1   1        Yes    Yes    Yes
GigabitEthernet 0/1   2        Yes    No     Yes
GigabitEthernet 0/1   3        No     Yes    No
GigabitEthernet 0/1   4        No     No     No
GigabitEthernet 0/1   5        Yes    Yes    Yes
GigabitEthernet 0/1   6        Yes    Yes    Yes
GigabitEthernet 0/1   7        Yes    Yes    Yes
```

Field	Description
En	Y means the DCB capability of the interface is enabled, N means the DCB capability is disabled, and the “-“ means the interface has no DCB capability.
Will	Y indicates it is willing to accept the peer configuration, N indicates it is not willing to accept the peer configuration, and the “-“ indicates the willing setting is unconcerned.
Err	Y indicates negotiation error, N indicates negotiation is normal, and the “-“ indicates that the corresponding DCB capability does not need negotiation.
CapLoc	The max. number of traffic classes supporting PFC simultaneously on the local interface, ranging from 1 to 8; - indicates that the local end has no PFC capability.
CapPeer	The max. number of traffic classes supporting PFC simultaneously on the peer interface, ranging from 1 to 8; - indicates that the PFC capability is not found in the peer end.
Priority	802.1p priority of the interface, ranging from 0 to 7
EnLoc	Whether the local interface specified 802.1p priority enables PFC; Yes is for enabled, No is for disabled, and – represents that the local end has no PFC capability.

EnPeer	Whether the peer end specified 802.1p priority enables PFC; Yes is for enabled, No is for disabled, and – represents that the PFC capability is not found in the peer end.
EnOper	After the negotiation of both ends, whether the specified 802.1p priority enables PFC; Yes is for enabled, No is for disabled, and – represents not negotiated yet.

This example shows how to display the configuration information on APP capability negotiation of a specified interface:

```
Ruijie#show dcbx information app interface gigabitethernet 0/1
DCBX app - Enabled state, Willing state and Error state
============================================================
      Interface       Local En/Will/Err  Peer En/Will/Err
-------------------- ------------------ --------------------
GigabitEthernet 0/1   Y/N/N               Y/N/N

                     DCBX app - Local FCoE Priority Information
====================================================================
============
      Interface         Sel Type          OUI        Protocol Id
LocPriority
--------------------- ----------- --------------- -------------
---------------
GigabitEthernet 0/1   0(Ether)    00-1b-21(Intel) 0x0cbc(iSCSI) 1
GigabitEthernet 0/2   0(Ether)    00-1b-21(Intel) 0x8906(FCoE)  1

                     DCBX app - Peer FCoE Priority Information
====================================================================
============
     Interface         Sel Type          OUI        Protocol Id
PeerPriority
--------------------- ----------- --------------- -------------
---------------
GigabitEthernet 0/1   0(Ether)    00-1b-21(Intel) 0x0cbc(iSCSI) 1
GigabitEthernet 0/2   0(Ether)    00-1b-21(Intel) 0x8906(FCoE)  1

                   DCBX app - Operation FCoE Priority Information
====================================================================
============
     Interface         Sel Type          OUI        Protocol Id
OperPriority
--------------------- ----------- --------------- -------------
---------------
GigabitEthernet 0/1   0(Ether)    00-1b-21(Intel) 0x0cbc(iSCSI) 1
```

```
GigabitEthernet 0/2   0(Ether)    00-1b-21(Intel) 0x8906(FCoE)  1
```

Field	Description
En	Y means the DCB capability of the interface is enabled, N means the DCB capability is disabled, and the "-" means the interface has no DCB capability.
Will	Y indicates it is willing to accept the peer configuration, N indicates it is not willing to accept the peer configuration, and the "-" indicates the willing setting is unconcerned.
Err	Y indicates negotiation error, N indicates negotiation is normal, and the "-" indicates that the corresponding DCB capability does not need negotiation.
Sel Type	Application selection type: ➢ 0: indicates Ethernet Type; for instance, the Seclector Field of FCoE is 0, and the Selector Field of iSCSI is 1. ➢ 1: indicates the Socket Number, namely, TCP/UDP socket ➢ 2, 3: reserved
OUI	Organization OUI, currently only displays for Intel OUI, and the OUI of the other organization is not displayed.
Protocol ID	Protocol ID of an application: ➢ 0x8906 or 0x8914: indicates FCoE ➢ 0x8906 or 3260: indicates iSCSI ➢ Other: unknown
LocPriority	The local end interface specifies the 802.1p priority allocated by an application, ranging from 0 to 7; - indicates that the local end has no APP capability.
PeerPriority	The peer end device specifies the 802.1p priority allocated by an application, ranging from 0 to 7; - indicates that the peer end has no APP capability.
OperPriority	After the negotiation of both ends, the priority allocated by the specified application; – represents not negotiated yet.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.21 show priority-flow-control deadlock statistics

Use this command to display the PFC deadlock statistics of an interface.

show priority-flow-control deadlock statistics [**interface** *interface*]

Parameter Description

Parameter	Description
interface	Indicates an interface name.

Defaults

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide When no interface is specified, the PFC deadlock statistics of all interfaces are displayed.

Configuration Examples The following example displays the PFC deadlock statistics of Interface hundredGigabitEthernet 0/1.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#show priority-flow-control deadlock statistics
interface hundredGigabitEthernet 0/1
Interface                Cos_value   Count        Recover
-------------------------  ----------  -------------  --------
Hu0/1                    0          0           True
Hu0/1                    1          0           True
Hu0/1                    2          0           True
Hu0/1                    3          0           True
Hu0/1                    4          0           True
Hu0/1                    5          0           True
Hu0/1                    6          0           True
Hu0/1                    7          0           True
```

Field description:

Field	Description
Interface	Interface name
cos_value	PFC priority
count	Number of deadlock times

1.22 show priority-flow-control deadlock status

Use this command to display the PFC deadlock configuration.

show priority-flow-control deadlock status

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide Use this command to display the PFC deadlock configuration and status.

Configuration Examples The following example displays the PFC deadlock configuration and status.

```
Ruijie#show priority-flow-control deadlock status
Global PFC Deadlock: 1-2
Time precision: High<10ms>
Packet dispose: Forward
Limit cos-value: off
Limit period: 5
Limit frequency: 10
Priority attribute:
cos-value  detect-time  recover-time
-------------  ---------------  ----------------
1         1          10
2         15         20

Interface Enable:
interface    cos-value
------------    ----------
Hu0/1       1-2
Hu0/2       2

Limit Log(Close PFC Log):
Interface   Cos-value  Frequency  Time
------------   -------------  ---------------
-------------------------------
Hu0/1     1         20        2017-12-15 11:00:00
Hu0/1     2         20        2017-12-15 11:00:00
```

```
Hu0/1      1          20         2017-12-15 12:00:00
Hu0/1      2          20         2017-12-15 12:00:00
Hu0/1      1          20         2017-12-15 13:00:00
Hu0/1      2          20         2017-12-15 13:00:00
Hu0/1      1          20         2017-12-15 14:00:00
Hu0/1      2          20         2017-12-15 14:00:00
Hu0/1      1          20         2017-12-15 15:00:00
Hu0/1      2          20         2017-12-15 15:00:00
```

Field description:

Field	Description
Global PFC Deadlock	Priority value configured for the PFC deadlock function
Time precision	PFC deadlock time precision. High precision (10ms) is configured by default.
Packet dispose	Packet processing mode in the PFC deadlock state. The default processing mode is **Forward**.
Limit cos-value	Priority value configured for the PFC deadlock threshold
Limit period	Detection period set for the PFC deadlock threshold
Limit frequency	PFC deadlock threshold
Priority attribute	PFC deadlock priority attributes (cos-value, detection time, and recovery time)
Interface Enable	Interface on which the PFC deadlock function is enabled and priority information (interface name and enabling priority)
Limit Log	PFC deadlock threshold log (recording the historical disabling of the PFC function resulted from that the number of PFC deadlock events exceeds the threshold)
Interface	Interface on which the number of PFC deadlock events exceeds the threshold
Cos-value	Priority for which the number of PFC deadlock events exceeds the threshold
Frequency	Number of PFC deadlock events that occur in a period
Time	Time at which the number of PFC deadlock events exceeds the threshold

Prompts N/A

Platform Description N/A

1.23 show priority-flow-control status

Use this command to show the PFC configuration and status information.

show priority-flow-control status [**interface** *intf-name1*]

Parameter Description

Parameter	Description
intf-name1	Interface name

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide If the intf-name 1 parameter is not defined, the configuration and status information of all ports is shown.

Configuration Examples The following example shows the configuration and status information of the interface FastEthernet 0/1:

```
Ruijie#show priority-flow-control status interface Fa 0/1
Interface  PriorityEnabledPFC PriorityEnalbedPFCByUser
--------     --------------  --------------
FastEthernet 0/1   3                   3 4
```

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

1.24 show priority-flow-control statistics

Use this command to show the PFC statistics.
show priority-flow-control statistics [**interface** *intf-name1*]
Use this command to show the PFC statistics and top history statistics.
show priority-flow-control statistics [history-top] [**interface** *interface-name*]

Parameter Description

Parameter	Description
intf-name1	Interface name

Defaults N/A

Command Mode Privileged EXEC mode.

Usage Guide If the intf-name 1 parameter is not defined, the PFC flow control statistics of all ports is

shown.

Configuration Examples

1. The following example shows the PFC statistics of the interface FastEthernet 0/1:

```
Ruijie#show    priority-flow-control    statistics    interface
FastEthernet 0/1
interface   Priority  PauseSend    PauseSend-Rate    PauseReceived
PauseReceived-Rate
                            (packets/sec)
(packets/sec)
----------  --------  -----------  ----------------  -------------
------------------
Fa 0/1      0       0          0              0           0
Fa 0/1      1       0          0              0           0
Fa 0/1      2       0          0              0           0
Fa 0/1      3       0          0              0           0
Fa 0/1      4       0          0              0           0
Fa 0/1      5       0          0              0           0
Fa 0/1      6       0          0              0           0
Fa 0/1      7       0          0              0           0
```

Field description:

Field	Description
Priority	Indicates the 802.1p flow control.
PauseSend	Indicates the quantity of sent PFC packets.
PauseSend-Rate	Indicates the rate of sending PFC packets.
PauseReceived	Indicates the quantity of received PFC packets.
PauseReceived-Rate	Indicates the rate of receiving PFC packets.

2. The following example shows the PFC top history statistics of the interface tenGigabitEthernet 0/1.

```
Ruijie#show priority-flow-control statistics interface history-top
tenGigabitEthernet 0/1
Interface : TenGigabitEthernet 0/1
 Priority : 0
  PauseSend            : 0
  PauseSend-Rate        : 0 packets/sec
  PauseSend-Rate-1st    : 0 packets/sec
  PauseSend-Rate-2nd    : 0 packets/sec
  PauseSend-Rate-3rd    : 0 packets/sec
  PauseReceived        : 0
  PauseReceived-Rate    : 0 packets/sec
  PauseReceived-Rate-1st : 0 packets/sec
  PauseReceived-Rate-2nd : 0 packets/sec
  PauseReceived-Rate-3rd : 0 packets/sec
 Priority : 1
```

```
 PauseSend            : 0
 PauseSend-Rate        : 0 packets/sec
 PauseSend-Rate-1st    : 0 packets/sec
 PauseSend-Rate-2nd    : 0 packets/sec
 PauseSend-Rate-3rd    : 0 packets/sec
 PauseReceived         : 0
 PauseReceived-Rate    : 0 packets/sec
 PauseReceived-Rate-1st : 0 packets/sec
 PauseReceived-Rate-2nd : 0 packets/sec
 PauseReceived-Rate-3rd : 0 packets/sec
Priority : 2
 PauseSend            : 0
 PauseSend-Rate        : 0 packets/sec
 PauseSend-Rate-1st    : 0 packets/sec
 PauseSend-Rate-2nd    : 0 packets/sec
 PauseSend-Rate-3rd    : 0 packets/sec
 PauseReceived         : 0
 PauseReceived-Rate    : 0 packets/sec
 PauseReceived-Rate-1st : 0 packets/sec
 PauseReceived-Rate-2nd : 0 packets/sec
 PauseReceived-Rate-3rd : 0 packets/sec
Priority : 3
 PauseSend            : 0
 PauseSend-Rate        : 0 packets/sec
 PauseSend-Rate-1st    : 0 packets/sec
 PauseSend-Rate-2nd    : 0 packets/sec
 PauseSend-Rate-3rd    : 0 packets/sec
 PauseReceived         : 0
 PauseReceived-Rate    : 0 packets/sec
 PauseReceived-Rate-1st : 0 packets/sec
 PauseReceived-Rate-2nd : 0 packets/sec
 PauseReceived-Rate-3rd : 0 packets/sec
Priority : 4
 PauseSend            : 0
 PauseSend-Rate        : 0 packets/sec
 PauseSend-Rate-1st    : 0 packets/sec
 PauseSend-Rate-2nd    : 0 packets/sec
 PauseSend-Rate-3rd    : 0 packets/sec
 PauseReceived         : 0
 PauseReceived-Rate    : 0 packets/sec
 PauseReceived-Rate-1st : 0 packets/sec
 PauseReceived-Rate-2nd : 0 packets/sec
 PauseReceived-Rate-3rd : 0 packets/sec
Priority : 5
```

```
 PauseSend            : 0
 PauseSend-Rate        : 0 packets/sec
 PauseSend-Rate-1st    : 0 packets/sec
 PauseSend-Rate-2nd    : 0 packets/sec
 PauseSend-Rate-3rd    : 0 packets/sec
 PauseReceived         : 0
 PauseReceived-Rate    : 0 packets/sec
 PauseReceived-Rate-1st : 0 packets/sec
 PauseReceived-Rate-2nd : 0 packets/sec
 PauseReceived-Rate-3rd : 0 packets/sec
Priority : 6
 PauseSend            : 0
 PauseSend-Rate        : 0 packets/sec
 PauseSend-Rate-1st    : 0 packets/sec
 PauseSend-Rate-2nd    : 0 packets/sec
 PauseSend-Rate-3rd    : 0 packets/sec
 PauseReceived         : 0
 PauseReceived-Rate    : 0 packets/sec
 PauseReceived-Rate-1st : 0 packets/sec
 PauseReceived-Rate-2nd : 0 packets/sec
 PauseReceived-Rate-3rd : 0 packets/sec
Priority : 7
 PauseSend            : 0
 PauseSend-Rate        : 0 packets/sec
 PauseSend-Rate-1st    : 0 packets/sec
 PauseSend-Rate-2nd    : 0 packets/sec
 PauseSend-Rate-3rd    : 0 packets/sec
 PauseReceived         : 0
 PauseReceived-Rate    : 0 packets/sec
 PauseReceived-Rate-1st : 0 packets/sec
 PauseReceived-Rate-2nd : 0 packets/sec
 PauseReceived-Rate-3rd : 0 packets/sec
```

Field description:

Field	Description
Priority	Indicates the 802.1p priority value.
PauseSend	Indicates the quantity of sent PFC packets.
PauseSend-Rate	Indicates the current rate of sending PFC packets.
PauseSend-Rate-1st	Indicates the highest historical rate of sending PFC packets.
PauseSend-Rate-2nd	Indicates the second highest historical rate of sending PFC packets.
PauseSend-Rate-3rd	Indicates the third highest historical rate of sending PFC packets.
PauseReceived	Indicates the quantity of received PFC packets.

PauseReceived-Rate	Indicates the current rate of receiving PFC packets.
PauseReceived-Rate-1st	Indicates the highest historical rate of receiving PFC packets.
PauseReceived-Rate-2nd	Indicates the second highest historical rate of receiving PFC packets.
PauseReceived-Rate-3rd	Indicates the third highest historical rate of receiving PFC packets.

Related Commands

Command	Description
N/A	N/A

Platform Description N/A

2 VXLAN Commands

2.1 anycast-gateway

Use this command to configure the Overlay router anycast attribute.
anycast-gateway

Use the **no** form of this command to cancel the anycast attribute of the Overlay router interface.
no anycast-gateway

Parameter Description

Parameter	Description
N/A	N/A

Defaults The Overlay router interface works in non-anycast mode by default.

Command Mode Overlay router interface mode

Default Level 14

Usage Guide After the anycast attribute is configured, the device will use the MAC address of the global virtual anycast gateway as the gateway MAC address.
The anycast gateway IP addresses in the same VXLAN instance on the network must be the same.

Configuration Examples The following example sets the Overlay router interface as an anycast gateway.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#interface OverlayRouter 1
Ruijie(config-if-OverlayRouter 1)# anycast-gateway
```

Verification Run the **show run interface overlayrouter** command to display the anycast configuration of the Overlay router interface.

```
Ruijie(config-if-OverlayRouter 1)# show run int overlayrouter 1

Building configuration...
Current configuration : 72 bytes

interface OverlayRouter 1
 anycast-gateway
```

Common Errors In the same VXLAN instance, the anycast gateway is configured for some devices but not configured for others, resulting in an IP/MAC address conflict.

Platform Description N/A

2.2 arp suppress enable(VTEP Configuration Mode)

Use this command to enable ARP suppression globally.
arp suppress enable

Use the **no** form of this command to disable ARP suppression globally.
no arp suppress enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults ARP suppression is disabled by default.

Command Mode VTEP configuration mode

Default Level 14

Usage Guide After ARP suppression is enabled, the switch responds to the ARP request as a proxy.
Restrictions on ARP suppression:

1. After ARP suppression is enabled, the VTEP device does not flood ARP packets.
2. After ARP suppression is enabled, the VTEP device serves as a proxy by using the host MAC address by default. The device responds to ARP requests as a proxy according to stored ARP entries. The MAC address used for proxy response is the actual host MAC address found in the ARP entries.
3. After ARP suppression is enabled, you can run **route-in-vni** command on an overlay router interface to enable the ARP proxy function. The device responds to ARP requests as a proxy on a VNI-based VXLAN instance with ARP proxy enabled, and the MAC address used for proxy response is the MAC address of the VTEP device (if the anycast gateway is configured for the overlay router interface, the anycast MAC address is used; otherwise, the physical MAC address of VTEP device is used).
4. ARP suppression cannot be enabled on VXLAN bridging devices.
5. ARP suppression and ARP proxy (by running the **route-in-vni** command) can be enabled simultaneously only on VXLAN gateways and the gateway MAC address is used for the proxy response.
6. When global ARP suppression is configured (by running the **arp suppress enable** command in VTEP configuration mode), ARP suppression is enabled on all VXLAN instances. When VXLAN instance–based ARP suppression is configured (by running the **arp suppress enable** command in VXLAN configuration mode), ARP suppression is enabled only on the VXLAN instance. You can configure global ARP suppression or VXLAN instance–based ARP suppression to enable ARP suppression on a VXLAN instance.

Configuration Examples The following example enables ARP suppression.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vtep
Ruijie(config-vtep)# arp suppress enable
```

Verification Run the **show vxlan arp suppress** command to display the ARP suppression status of the current device.

```
Ruijie(config-vtep)#show vxlan arp suppress
GLOBAL ARP-SUPPRESS: ON

ARP Suppress Detail:
VXLAN     VNI Configure    Effect Configure
---------- ----------------- -----------------
2          -             Enable
```

```
13          -             Enable
100       Enable           Enable
2000        -             Enable
```

2.3 arp suppress enable (VXLAN Configuration Mode)

Use this command to enable VNI-based ARP suppression.

arp suppress enable

Use the **no** form of this command to disable VNI-based ARP suppression.

no arp suppress enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults ARP suppression is disabled by default.

Command Mode VXLAN configuration mode

Default Level 14

Usage Guide After ARP suppression is enabled, the VTEP device automatically responds to ARP requests as a proxy by using the host MAC address.

Scenario restriction description:

1. After ARP suppression is enabled, the VTEP device does not flood ARP packets.
2. After ARP suppression is enabled, the VTEP device serves as a proxy by using the host MAC address by default. The device responds to ARP requests as a proxy according to stored ARP entries. The MAC address used for proxy response is the actual host MAC address found in the ARP entries.
3. After ARP suppression is enabled, you can run **route-in-vni** command on an overlay router interface to enable the ARP proxy function. The device responds to ARP requests as a proxy on a VNI-based VXLAN instance with ARP proxy enabled, and the MAC address used for proxy response is the MAC address of the VTEP device (if the anycast gateway is configured for the overlay router interface, the anycast MAC address is used; otherwise, the physical MAC address of VTEP device is used).
4. ARP suppression cannot be enabled on VXLAN bridging devices.
5. ARP suppression and ARP proxy (by running the **route-in-vni** command) can be enabled simultaneously only on VXLAN gateways and the gateway MAC address is used for the proxy response.

6. When global ARP suppression is configured (by running the **arp suppress enable** command in VTEP configuration mode), ARP suppression is enabled on all VXLAN instances. When VXLAN instance–based ARP suppression is configured (by running the **arp suppress enable** command in VXLAN configuration mode), ARP suppression is enabled only on the VXLAN instance. You can configure global ARP suppression or VXLAN instance–based ARP suppression to enable ARP suppression on a VXLAN instance.

Configuration Examples The following example enables ARP suppression on VNI 100.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vxlan 100
Ruijie(config-vxlan)# arp suppress enable
```

Verification Run the **show vxlan arp suppress** command to display the ARP suppression status of the current device.

```
Ruijie#show vxlan arp suppress
GLOBAL ARP-SUPPRESS: OFF

ARP Suppress Detail:
VXLAN     VNI Configure    Effect Configure
---------- ----------------- -----------------
2          -              -
13         -              -
100       Enable          Enable
2000        -              -
```

Prompts

```
N/A
```

Common Errors N/A

Platform Description N/A

2.4 clear vxlan config all

Use this command to clear all VXLAN-related configuration.

clear vxlan config all

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide This command is used to delete all VXLAN-related configuration, including VXLAN instances, VTEP configuration, overlay router configuration, and Overlay tunnel configuration but excluding the EVPN-related configuration.

Configuration Examples

```
The following example clears all VXLAN-related configuration.
Ruijie# clear vxlan config all
WARNING: this action will remove ALL vxlan configurations.
Do you want to continue? (y/N) y
Ruijie#
```

Verification Run the **show run** command to check whether all VXLAN-related configuration is cleared.

Prompts

```
N/A
```

Common Errors N/A

Platform Description N/A

2.5 clear vxlan log

Use this command to clear key records about the operation of the VXLAN process.

clear vxlan log

Parameter Description

Parameter	Description
N/A	N/A

Defaults N/A

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example clears key records about the operation of the VXLAN process.

```
Ruijie# clear vxlan log
```

Verification Run the **show vxlan log** command to check whether key information about the operation of the current VXLAN process is cleared.

```
Ruijie# show vxlan log
Ruijie#
```

Prompts N/A

Common Errors N/A

Platform Description N/A

2.6 clear vxlan mac dynamic

Use this command to clear VXLAN MAC entries.

clear vxlan mac dynamic [**vni** *vni-number* | **address** *mac-address* **vni** *vni-number*]

Parameter Description

Parameter	Description
vni-number	Deletes the VXLAN MAC entries of a specified VNI. The range is from 1 to 16,777,215.
mac-address	Deletes the VXLAN MAC entries of a specified address. The format is xxxx.xxxx.xxxx.

Defaults N/A

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide Only VXLAN MAC entries dynamically learnt via the chip can be deleted. Static MAC entries configured via the SDN/CLI or MAC entries generated by the protocol cannot be deleted.

Configuration Examples The following example clears VXLAN MAC entries of the VXLAN 3 instance.

```
Ruijie#clear vxlan mac dynamic vni 3
```

Verification Run the **show vxlan mac** command to check whether the VXLAN MAC entries (Type = dynamic) dynamically learnt by the current device are cleared.

```
Ruijie#show vxlan mac
Vxlan      MAC Address        Type    Location Interface                  Vlan
----------  ------------------ -------- -------- ------------------------------
------
     1   0000.1111.1111      STATIC   REMOTE   OverlayTunnel 1             -
     1   0000.1111.2222      STATIC   REMOTE   OverlayTunnel 1             -
     1   0000.2222.2222      STATIC   LOCAL    GigabitEthernet 0/1          1
     1   0000.5555.5555      STATIC   LOCAL    GigabitEthernet 0/1          1
```

2.7 clear vxlan vni-statistics

Use this command to clear VNI traffic statistics.

clear vxlan vni-statistics { **all | vni** *vni-number* }

Parameter Description

Parameter	Description
all	Clears traffic statistics of all VNIs.
vni *vni-number*	Clears traffic statistics of a specified VNI. The value of *vni-number* ranges from 1 to 16,777,215.

Defaults N/A

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide This command is used to clear VNI traffic statistics.

Configuration Examples This following example clears traffic statistics of VNI 3.

```
Ruijie# clear vxlan vni-statistics vni 3
```

Verification Run the **show vxlan vni-statistics** command to check whether VNI traffic statistics are cleared.

```
Ruijie# show vxlan vni-statistics vni 3
VXLAN 3:
   10 seconds input rate 0 bits/sec, 0 packets/sec
   10 seconds output rate 0 bits/sec, 0 packets/sec
   0 packets input, 0 bytes
   0 packets output, 0 bytes
```

Prompts N/A

Common Errors N/A

Platform Description N/A

2.8 encapsulation vxlan

Use this command to configure VXLAN encapsulation for subinterfaces.
encapsulation vxlan *vni-number*

Use the **no** form of this command to cancel VXLAN encapsulation of subinterfaces.
no encapsulation vxlan [*vni-number*]

Parameter Description

Parameter	Description
vni-number	Indicates the VNI. The value ranges from 1 to 16,777,215.

Defaults VXLAN encapsulation is not configured for subinterfaces by default.

Command Mode L2 subinterface configuration mode

Default Level 14

Usage Guide

1. Only one VXLAN encapsulation rule can be configured for one subinterface.
2. You can preconfigure VXLAN encapsulation rules when no VXLAN instance exists.

Configuration Examples

The following example configures encapsulation rule named VXLAN 1 for subinterface TenGigabitEthernet 0/1.1.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#interface te 0/1.1
Ruijie(config-subif-TenGigabitEthernet 0/1.1)# encapsulation vxlan 1
```

Verification

Run the **show run** command to check whether the current configuration is successful.

```
N/A
```

Prompts

```
N/A
```

Common Errors

N/A

Platform Description

N/A

2.9 evpn arp mac-learning enable

Use this command to extract MAC entries from EVPN MAC-IP Type-2 routes (ARP entries).
evpn arp mac-learning enable

Use the **no** form of this command to cancel extracting MAC entries from EVPN MAC-IP Type-2 routes (ARP entries).
no evpn arp mac-learning enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults

This function is disabled by default.

Command Mode

VXLAN configuration mode

Default Level

14

Usage Guide After this command is configured, the device parses one ARP entry and one MAC entry from a MAC-IP type-2 route synchronized from the VXLAN-EVPN neighbor.
This command is disabled by default and the device parses one ARP entry but no MAC entry from a MAC-IP type-2 route synchronized from the VXLAN-EVPN neighbor.
This command is configured on a VXLAN instance and affects only the EVPN entry parsing of the VXLAN instance. Other VXLAN instances, for which this command is not configured, are not affected.
This command can be used in combination with the **evpn mac advertise disable** command. After they are executed, the network-wide VXLAN-EVPN neighbors synchronize only MAC-IP type-2 routes but no MAC-only type-2 routes. All devices parse and extract MAC entries from MAC-IP type-2 routes.
This command is configured on L2-VNI VXLAN instances.

Configuration Examples This command configures VXLAN 10 to extract MAC entries from EVPN MAC-IP type-2 routes (ARP entries).

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vxlan 10
Ruijie(config-vxlan)#evpn arp mac-learning enable
```

Verification Run the **show run** command to check whether the configuration is successful.

Prompts N/A

Common Errors In symmetric deployment scenarios, this command is configured on L3-VNI VXLAN instances.

Platform Description N/A

2.10 evpn mac advertise disable

Use this command to configure an L2-VNI VXLAN instance not to synchronize the local MAC address to the remote VTEP through EVPN messages.
evpn mac advertise disable

Use the **no** form of this command to cancel configuring an L2-VNI VXLAN instance not to synchronize the local MAC address to the remote VTEP through EVPN messages.
no evpn mac advertise disable

Parameter

Parameter	Description

Description

N/A	N/A

Defaults This function is disabled by default.

Command Mode VXLAN configuration mode

Default Level 14

Usage Guide This command is not configured on a device by default. The device generates one MAC-only type-2 route through the VXLAN-EVPN protocol based on a locally learned MAC entry, and synchronizes the type-2 route to the EVPN neighbor (that is, remote VTEP). Then, the remote VTEP can learn the MAC entry from the MAC-only type-2 route.

After this command is configured, the device does not generate VXLAN-EVPN MAC-only type-2 routes based on MAC entries, and therefore, it will not advertise MAC-only type-2 routes to the EVPN neighbor.

This command is configured on a VXLAN instance and affects only whether the VXLAN instance generates MAC-only type-2 routes. Other VXLAN instances, for which this command is not configured, can still generate MAC-only type-2 routes.

This command can be used in combination with the **evpn arp mac-learning enable** command. After they are executed, the network-wide VXLAN-EVPN neighbors synchronize only MAC-IP type-2 routes but no MAC-only type-2 routes. All devices parse and extract MAC entries from MAC-IP type-2 routes.

⚠ This command can be configured only on L2-VNI VXLAN instances (that is, VXLAN instances with the **symmetric** command not configured). It is unavailable on L3-VNI VXLAN instances.

Configuration Examples The following example configures VXLAN 10 not to synchronize the local MAC address to the remote VTEP through EVPN messages.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vxlan 10
Ruijie(config-vxlan)#evpn mac advertise disable
```

Verification Run the **show run** command to check whether the configuration is successful.

Prompts N/A

Common Errors This command is configured on L3-VNI VXLAN instances.

Platform Description	N/A

2.11 evpn mac advertise enable

Use this command to synchronize MAC entries with the egress of static tunnels to the remote VTEP.
evpn mac advertise enable

Use the **no** form of this command not to synchronize MAC entries with the egress of static tunnels to the remote VTEP.
no evpn mac advertise enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults	This function is disabled by default.
Command Mode	Overlay tunnel configuration mode
Default Level	14
Usage Guide	This command is not configured on a device by default. The egress of MAC entries learned by the device from packets sent from a static tunnel is a static tunnel and such MAC entries are not synchronized to EVPN neighbors. After this command is configured, MAC entries with the egress of static tunnels are synchronized to EVPN neighbors via VXLAN-EVPN.
Configuration Examples	The following example synchronizes MAC entries with the egress of Overlay Tunnel 3 to the remote VTEP.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#interface overlaytunnel 3
Ruijie(config-if-OverlayTunnel 3)#evpn mac advertise enble
```

Verification	Run the **show run** command to check whether the configuration is successful.
Prompts	N/A
Common	N/A

Errors

Platform Description N/A

2.12 evpn mac inactive

Use this command to configure an L2-VNI VXLAN instance not to deliver MAC addresses remotely synchronized through EVPN messages to the local MAC address table.
evpn mac inactive

Use this command to cancel configuring an L2-VNI VXLAN instance not to deliver MAC addresses remotely synchronized through EVPN messages to the local MAC address table.
no evpn mac inactive

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode VXLAN configuration mode

Default Level 14

Usage Guide After this command is configured, the device does not learn MAC entries from VXLAN-EVPN type-2 routes (MAC-IP or MAC-only type-2 routes) synchronized from neighbors.
This command is not configured on a device by default. The device learns MAC entries from VXLAN-EVPN type-2 routes synchronized from neighbors.
This command is configured on a VXLAN instance and affects only whether the VXLAN instance learns MAC entries from VXLAN-EVPN type-2 routes. Other VXLAN instances, for which this command is not configured, can still learn MAC entries.

⚠ This command can be configured only on L2-VNI VXLAN instances (that is, VXLAN instances with the **symmetric** command not configured). It is unavailable on L3-VNI VXLAN instances.

Configuration Examples The following example bans VXLAN 10 from delivering MAC addresses remotely synchronized through EVPN messages to the local MAC address table.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
```

```
Ruijie(config)#vxlan 10
Ruijie(config-vxlan)#evpn mac inactive
```

Verification Run the **show run** command to check whether the configuration is successful.

Prompts N/A

Common Errors This command is configured on L3-VNI VXLAN instances.

Platform Description N/A

2.13 evpn mac-ip advertise enable

Use this command to synchronize ARP entries with the egress of static tunnels to the remote VTEP.
evpn mac-ip advertise enable

Use the **no** form of this command not to synchronize ARP entries with the egress of static tunnels to the remote VTEP.
no evpn mac-ip advertise enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode Overlay tunnel configuration mode

Default Level 14

Usage Guide This command is not configured on a device by default. The egress of ARP entries learned by the device from packets sent from a static tunnel is a static tunnel and such ARP entries are not synchronized to EVPN neighbors.
After this command is configured, ARP entries with the egress of static tunnels are synchronized to EVPN neighbors via VXLAN-EVPN.

Configuration The following example synchronizes ARP entries with the egress of Overlay Tunnel 3 to the remote VTEP.

Examples

```
Ruijie#configure terminal
Enter one configuration command in each line, ended with CNTL/Z.
Ruijie(config)#interface overlaytunnel 3
Ruijie(config-if-OverlayTunnel 3)#evpn mac-ip advertise enable
```

Verification Run the **show run** command to check whether the configuration is successful.

Prompts N/A

Common Errors N/A

Platform Description N/A

2.14 evpn nd mac-learning enable

Use this command to extract MAC entries from EVPN MAC-IPv6 type-2 routes (IPv6 ND packets).
evpn nd mac-learning enable

Use the **no** form of this command to cancel extracting MAC entries from EVPN MAC-IPv6 type-2 routes (IPv6 ND packets).
no evpn nd mac-learning enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode VXLAN configuration mode

Default Level 14

Usage Guide After this command is configured, the device parses one IPv6 ND entry and one MAC entry from a MAC-IPv6 type-2 route (IPv6 ND entry) synchronized from the VXLAN-EVPN neighbor.
This command is disabled by default and the device parses one IPv6 ND entry but no MAC entry from a MAC-IPv6 type-2 route synchronized from the VXLAN-EVPN neighbor.
This command is configured on a VXLAN instance and affects only the EVPN entry parsing of the VXLAN

instance. Other VXLAN instances, for which this command is not configured, are not affected.
This command can be used in combination with the **evpn mac advertise disable** command. After they are executed, the network-wide VXLAN-EVPN neighbors synchronize only MAC-IPv6 type-2 routes but no MAC-only type-2 routes. All devices parse and extract MAC entries from MAC-IPv6 type-2 routes.
This command is configured on L2-VNI VXLAN instances.

Configuration Examples The following examples configure VXLAN 10 to extract MAC entries from EVPN MAC-IPv6 type-2 routes (IPv6 ND packets).

```
Ruijie#configure terminal
Enter one configuration command in each line, ended with CNTL/Z.
Ruijie(config)#vxlan 10
Ruijie(config-vxlan)#evpn nd mac-learning enable
```

Verification Run the **show run** command to check whether the configuration is successful.

Prompts N/A

Common Errors In symmetric deployment scenarios, this command is configured on L3-VNI VXLAN instances.

Platform Description N/A

2.15 evpn rt-2 advertise disable

Use this command to configure an L2-VNI VXLAN instance not to generate EVPN type-2 routes (MAC+ARP entries) and revoke generated routes.
evpn rt-2 advertise disable

Use the **no** form of this command to cancel configuring an L2-VNI VXLAN instance not to generate EVPN type-2 routes (MAC+ARP entries).
no evpn rt-2 advertise disable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command VXLAN configuration mode

Mode

Default Level 14

Usage Guide This command is not configured on a device by default. The device generates one MAC-only type-2 route through the VXLAN-EVPN protocol based on a locally learned MAC entry, and synchronizes the type-2 route to the EVPN neighbor (that is, remote VTEP). Then, the remote VTEP learns the MAC entry from the MAC-only type-2 route. In addition, the device generates one MAC-IP type-2 route through the VXLAN-EVPN protocol based on a locally learned ARP entry and synchronizes the type-2 route to the EVPN neighbor. Then, the remote VTEP learns the ARP entry and host route from the MAC-IP type-2 route.

After this command is configured, the MAC entries and ARP entries are not used to generate VXLAN-EVPN type-2 routes (MAC-IP or MAC-only routes) and therefore, no type-2 routes are advertised to EVPN neighbors.

This command is configured on a VXLAN instance and affects only whether the VXLAN instance generates type-2 routes. Other VXLAN instances, for which this command is not configured, can still generate type-2 routes.

⚠ This command can be configured only on L2-VNI VXLAN instances (that is, VXLAN instances with the **symmetric** command not configured). It is unavailable on L3-VNI VXLAN instances.

Configuration Examples The following example configures VXLAN 10 not to generate EVPN type-2 routes.

```
Ruijie#configure terminal
Enter one configuration command in each line, ended with CNTL/Z.
Ruijie(config)#vxlan 10
Ruijie(config-vxlan)#evpn rt-2 advertise disable
```

Verification Run the **show run** command to check whether the configuration is successful.

Prompts N/A

Common Errors This command is configured on L3-VNI VXLAN instances.

Platform Description N/A

2.16 extend-vlan

Use this command to specify the VLAN associated with a VXLAN instance. Packets of the associated VLAN will be encapsulated into the VXLAN format and forwarded. Multiple VLANs can associate with one VXLAN

instance.

extend-vlan *vlan-id-list*

Use the **no** form of this command to delete all VLANs associated with the VXLAN instance.

no extend-vlan [*vlan-id-list*]

Parameter Description

Parameter	Description
vlan-id-list	ID of the VLAN associated with a VXLAN instance, ranging from 1 to 4,094. When the product supports multiple VLANs, the value can be multiple VLAN IDs. When the product supports only one VLAN, you can enter only one VLAN ID.

Defaults N/A

Command Mode VXLAN configuration mode

Default Level 14

Usage Guide One VLAN cannot be associated with different VXLAN instances.
After a VLAN is associated with a VXLAN instance, all packets of the VLAN will be encapsulated into the VXLAN format. Therefore, an SVI cannot be used as the VLAN IP gateway on the device.

Configuration Examples The following example associates VXLAN 1 with VLAN 10.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vxlan 1
Ruijie(config-vxlan)#extend-vlan 10
```

The following example associates VXLAN 2 with VLANs 11, 12, 13, 14, and 22.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
```

```
Ruijie(config)#vxlan 2
Ruijie(config-vxlan)#extend-vlan 11-14,22
```

The following example deletes VLANs 12 and 13 associated with VXLAN 2.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vxlan 2
Ruijie(config-vxlan)#no extend-vlan 12-13
```

The following example deletes all VLANs associated with VXLAN 2.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vxlan 2
Ruijie(config-vxlan)#no extend-vlan
```

Verification Run the **show vxlan** *vni-number* command to display the **extend-vlan** value.

```
Ruijie#show vxlan 2
VXLAN 2
   Symmetric property  : FALSE
   Router Interface    : -
   Extend VLAN         : 11-12,22
   VTEP Adjacency Count: 0
```

Prompts If different VXLAN instances are associated with the same VLAN, the following prompt is displayed:
Following reason prevent some vlans to be set as vxlan 4's extend-vlan:
The vlan conflict with other vxlan extend-vlan

Common Errors Different VXLAN instances are associated with the same VLAN.

Platform Description N/A

2.17 fabric anycast-gateway-mac

Use this command to configure the virtual MAC address of the global anycast gateway.
fabric anycast-gateway-mac *mac-addr*

Use the **no** form of this command to delete the virtual MAC address of the global anycast gateway.
no fabric anycast-gateway-mac [*mac-addr*]

Parameter

Parameter	Description

Description

mac-addr	Virtual MAC address, in the format of xxxx.xxxx.xxxx

Defaults N/A

Command Mode Global configuration mode

Default Level 14

Usage Guide If the anycast gateway is required in a customer scenario, the virtual MAC address of the anycast gateway must be configured on the device first. The configured virtual MAC address must be unique on the whole network and cannot be 0000.0000.0000, a multicast MAC address, a local host MAC address, or MAC addresses of other VXLAN devices on the network.

Configuration Examples The following example sets the virtual MAC address of the anycast gateway to 0000.1111.2222.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.

Ruijie(config)# fabric anycast-gateway-mac 0000.1111.2222
```

Verification Run the **show vxlan global** command to display virtual MAC address configuration on the current device.

```
Ruijie#show vxlan global
Local switch vtep ip: 1.1.1.1.
  Binds with interface loopback 1, line protocol is UP.
Anycast mac: 0000.1234.5678 .

  1 overlayrouters enable anycast .
```

Prompts N/A

Common Errors The anycast gateway can be configured to implement virtual machine migration without perception. The gateway MAC address and IP address do not need to be modified before and after virtual machine migration. If different virtual MAC addresses are configured for different devices, perception-free migration cannot be achieved.
If the MAC address of the network-wide anycast gateway is set to the MAC address of other VXLAN devices

on the network, MAC addresses on the network will be in chaos, resulting in a data forwarding failure.

Platform Description N/A

2.18 nd suppress enable (VTEP Configuration Mode)

Use this command to enable global IPv6 ND suppression.
nd suppress enable

Use the **no** form of this command to disable global IPv6 ND suppression.
no nd suppress enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults Global IPv6 ND suppression is disabled by default.

Command Mode VTEP configuration mode

Default Level 14

Usage Guide After IPv6 ND suppression is enabled, the VTEP device automatically responds to NS multicast packets as a proxy by using the host MAC address.
Scenario restriction description:

1. After ND suppression is enabled, the VTEP device does not flood IPv6 NS multicast packets.
2. After ND suppression is enabled, the VTEP device serves as a proxy by using the host MAC address by default. The device responds to packets as a proxy according to the stored ND entries. The MAC address used for proxy response is the actual host MAC address found in the ND entries.
3. IPv6 ND suppression cannot be enabled on VXLAN bridging devices.
4. When global ND suppression is configured (by running the **nd suppress enable** command in VTEP configuration mode), ND suppression is enabled on all VXLAN instances. When VXLAN instance–based ND suppression is configured (by running the **nd suppress enable** command in VXLAN configuration mode), ND suppression is enabled only on the VXLAN instance. You can configure global ND suppression or VXLAN instance–based ND suppression to enable ND suppression on a VXLAN instance.

Configuration Examples The following example enables IPv6 ND suppression.

```
Ruijie#configure terminal
```

```
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vtep
Ruijie(config-vtep)# nd suppress enable
```

Verification Run the **show vxlan nd suppress** command to display the IPv6 ND suppression status of the current device.

```
Ruijie(config-vtep)#show vxlan nd suppress
GLOBAL ND-SUPPRESS: ON

ND Suppress Detail:
VXLAN     VNI Configure    Effect Configure
---------- ----------------- -----------------
2          -             Enable
13         -             Enable
100       Enable          Enable
2000       -             Enable
```

Prompts N/A

Common Errors N/A

Platform Description N/A

2.19 nd suppress enable (VXLAN Configuration Mode)

Use this command to enable VNI-based IPv6 ND suppression.
nd suppress enable

Use the **no** form of this command to disable VNI-based IPv6 ND suppression.
no nd suppress enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults VNI-based IPv6 ND suppression is disabled by default.

Command Mode VXLAN configuration mode

Default Level 14

Usage Guide After IPv6 ND suppression is enabled, the VTEP device automatically responds to NS multicast packets as a proxy by using the host MAC address.

Scenario restriction description:

1. After ND suppression is enabled, the VTEP device does not flood IPv6 NS multicast packets.
2. After ND suppression is enabled, the VTEP device serves as a proxy by using the host MAC address by default. The device responds to packets as a proxy according to the stored ND entries. The MAC address used for proxy response is the actual host MAC address found in the ND entries.
3. IPv6 ND suppression cannot be enabled on VXLAN bridging devices.

Configuration Examples The following example enables IPv6 ND suppression on VNI 100.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vxlan 100
Ruijie(config-vxlan)# nd suppress enable
```

Verification Run the **show vxlan nd suppress** command to display the IPv6 ND suppression status of the current device.

```
Ruijie#show vxlan nd suppress
GLOBAL ND-SUPPRESS: OFF

ND Suppress Detail:
VXLAN     VNI Configure    Effect Configure
---------- ----------------- -----------------
2          -              -
13         -              -
100       Enable          Enable
2000        -              -
```

Prompts

```
N/A
```

Common Errors N/A

Platform Description N/A

2.20 port vxlan mode access

Use this command to configure an interface as a VXLAN network access interface. Use the **no** form of this command to cancel configuring an interface as a VXLAN network access interface.

port vxlan mode access

no port vxlan mode access

Parameter Description

Parameter	Description
N/A	N/A

Defaults No interface is configured as a VXLAN network access interface by default.

Command Mode Interface configuration mode

Default Level 14

Usage Guide This command is used to configure an interface as a VXLAN network access interface, to allow common IP packets that carry the destination UDP port number (4789 by default) dedicated to VXLAN packets to access the VXLAN network.

By default, the VXLAN network access device cannot encapsulate, via VXLAN, common IP packets that carry the destination UDP port number (4789 by default) dedicated to VXLAN packets, from hosts nor send them to the VXLAN network. On the interface that connects the device to the host, you can run the **port vxlan mode access** command to configure the interface as a VXLAN network access interface to solve the above problem.

⚠ This configuration applies only to layer-2 interfaces. This command is unavailable on an interface, on which the **no swithport** command is configured.

⚠ This command can be configured only on downlink host interfaces (AC side), and not on the uplink VXLAN tunnel interface (PW side). Otherwise, received VXLAN packets cannot be decapsulated.

⚠ In a scenario in which the MLAG technology is used for VXLAN network access, if this command is configured on a VAP interface connected to a downlink host, this command should also be

configured on the peer-link interface. Otherwise, the traffic passing through the peer-link interface cannot be forwarded to the downlink host.

Configuration Examples The following example configures an interface as a VXLAN network access interface.

```
Ruijie(config)#interface tfGigabitEthernet 0/1
Ruijie(config-if-TFGigabitEthernet 0/1)#port vxlan mode access
```

Verification Run the **show run interface** command to display the interface configuration.

```
Ruijie(config)#show run interface tfGigabitEthernet 0/1
Building configuration...
Current configuration : 58 bytes

interface tfGigabitEthernet 0/1
 port vxlan mode access
```

2.21 proxy check vlan disable

Use this command to disable VLAN check in the case of ARP proxy.
proxy check vlan disable

Use the **no** form of this command to enable VLAN check in the case of ARP proxy.
no proxy check vlan disable

Parameter Description

Parameter	Description
N/A	N/A

Defaults By default, VLAN check is enabled in the case of ARP proxy.

Command Mode VXLAN configuration mode

Default Level 14

Usage Guide After VLAN check and ARP proxy are enabled, if the L2 egress of the host requested by an ARP packet and the VLAN of the packet are the same as those of the ARP packet, the device discards the ARP request and does not serve as a proxy.
After VLAN check is disabled and ARP proxy is enabled, if the L2 egress of the host requested by an ARP

packet and the VLAN of the packet are the same as those of the ARP packet, the device can still serve as a proxy.

To implement the VLAN check function, run both the **arp suppress enable** and **route-in-vni** commands.

Configuration Examples The following example disables VLAN check in the case of ARP proxy.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# vxlan 1
Ruijie(config-vxlan)# proxy check vlan disable
```

Verification Run the **show run** command to display the configuration.

Prompts N/A

Common Errors N/A

Platform Description N/A

2.22 remote arp learn enable

Use this command to enable remote ARP packet learning globally.

remote arp learn enable

Use the **no** form of this command to disable remote ARP packet learning globally.

no remote arp learn enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults Remote ARP packet learning is disabled by default.

Command Mode	VTEP configuration mode
Default Level	14
Usage Guide	After remote ARP packet learning is enabled, the switch learns ARP entries from ARP packets encapsulated in the VXLAN format received from the VXLAN tunnel. Remote ARP packet learning can be enabled only on gateways in a centralized VXLAN. It is recommended to disable this function in other scenarios. This configuration command takes effect only on dynamic tunnels and is invalid to static tunnels. The device learns ARP entries from VXLAN packets received from static tunnels by default.

Configuration Examples	The following example enables remote ARP packet learning.
	`Ruijie#configure terminal`
	`Enter configuration commands, one per line.  End with CNTL/Z.`
	`Ruijie(config)#vtep`
	`Ruijie(config-vtep)# remote arp learn enable`

Verification	Run the **show run** command to display the configuration. `N/A`
Prompts	N/A
Common Errors	N/A
Platform Description	N/A

2.23 remote nd learn enable

Use this command to enable remote IPv6 ND entry learning globally.

remote nd learn enable

Use the **no** form of this command to disable remote IPv6 ND entry learning globally.

no remote nd learn enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults Remote IPv6 ND entry learning is disabled by default.

Command Mode VTEP configuration mode

Default Level 14

Usage Guide After remote IPv6 ND entry learning function is enabled, the switch learns IPv6 ND entries from the VXLAN-encapsulated IPv6 NS packets received from the VXLAN tunnels.

This configuration is applicable to gateways in the centralized VXLAN topology. It is not recommended in other scenarios.

This configuration command takes effect only on dynamic tunnels and is invalid to static tunnels. The device learns IPv6 ND entries from VXLAN packets received from static tunnels by default.

Configuration Examples The following example enables remote IPv6 ND entry learning.

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# vtep
Ruijie(config-vtep)# remote nd learn enable
```

Verification Run the **show run** command to display the configuration.

```
N/A
```

Prompts

```
N/A
```

Common Errors N/A

Platform Description N/A

2.24 route-in-vni

Use this command to enable the intra-VXLAN routing function on an Overlay router interface.
route-in-vni

Use the **no** form of this command to disable the intra-VXLAN routing function on the Overlay router interface.
no route-in-vni

Parameter Description

Parameter	Description
force	Uses the gateway MAC address forcibly for responses in the case of ARP proxy.

Defaults The intra-VXLAN routing function is disabled on the Overlay router interface by default.

Command Mode Overlay router interface mode

Default Level 14

Usage Guide After the intra-VNI routing function (ARP proxy) is enabled on an overlay router interface, the device uses the gateway MAC address to respond to all ARP requests from hosts in the VNI, to which the local overlay router interface belongs, when serving as an ARP proxy. In this way, the communication traffic between hosts in the same VNI is forwarded through VXLAN routes.

After the function of forcibly responding by using the gateway MAC address is enabled, the device responds with the gateway MAC address regardless of whether the device has the host entry requested by an ARP packet. After the function is disabled, the device responds with the MAC address only when the device has the host entry requested by an ARP packet. If the destination host entry does not exist, the device forwards the packet.

To use the intra-VXLAN routing function, the ARP suppression function must be enabled at the same time.

Configuration Examples

The following example enables the intra-VXLAN routing function.

```
Ruijie(config)#int overlayrouter 20
Ruijie(config-if-OverlayRouter 20)#route-in-vni
```

Verification

Run the **show run interface overlayrouter** command to display intra-VXLAN routing configuration of the Overlay router interface.

```
Ruijie(config-if-OverlayRouter 20)#show run int overlayrouter 20
Building configuration...
Current configuration : 118 bytes

interface OverlayRouter 20
 vrf forwarding vrf-10
 ip address 120.1.1.1 255.0.0.0
 anycast-gateway
 route-in-vni
```

Prompts N/A

Common Errors N/A

Platform Description N/A

2.25 router-interface

Use this command to set the VXLAN routing (gateway) interface.
router-interface *interface-name*

Use the **no** form of this command to delete the VXLAN routing (gateway) interface.
no router-interface [*interface-name*]

Parameter Description

Parameter	Description
interface-name	VXLAN routing (gateway) interface. Only Overlay router interfaces are supported.

Defaults N/A

Command Mode VXLAN configuration mode

Default Level 14

Usage Guide In normal cases, the VXLAN routing interface is used as the IP gateway of VXLAN users, similar to the SVI interface of a VLAN. An Overlay router interface can associate with only one VXLAN.

Configuration Examples The following example sets the routing (gateway) interface of VXLAN 1 to an interface of Overlay router 1.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vxlan 1
Ruijie(config-vxlan)#router-interface OverlayRouter 1
```

Verification Run the **show vxlan** *vni-number* command to display the VXLAN routing (gateway) interface.

```
Ruijie#show vxlan 1
VXLAN 1
   Symmetric property  : FALSE
   Router Interface    : overlayrouter 1 (non-anycast)
   Extend VLAN         : -
   VTEP Adjacency Count: 0
```

Prompts When a nonexistent overlay router interface is associated, the following prompt is displayed:

```
Ruijie(config)#vxlan 1
Ruijie(config-vxlan)#router-interface OverlayRouter 100
                                                    ^
```

% Invalid input detected at '^' marker.

When one overlay router interface is associated with multiple VXLANs, the following prompt is displayed:

```
Failed to configure router-interface: configuration conflict
```

Common Errors One overlay router interface is associated with multiple VXLANs.

Platform Description N/A

2.26 show vxlan

Use this command to display the VXLAN configuration and status.

show vxlan [*vni-number* **]**

Parameter Description

Parameter	Description
vni-number	Displays the VXLAN instance quantity and configuration information of specified VXLANs. The quantity value ranges from 1 to 16,777,215.

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples 1. Run the **show vxlan** command to display the configuration and status of all VXLAN instances.

```
Ruijie#show vxlan
VXLAN Total Count: 2
VXLAN Capacity   : 4000

VXLAN 1
   Symmetric property  : FALSE
   Router Interface    : -
   Extend VLAN       : 100
   VTEP Adjacency Count: 2
   VTEP Adjacency List :
```

```
   Interface            Source IP      Destinaton IP   Type
   -------------------- --------------- --------------- -------
   OverlayTunnel 4097    1.1.1.1        2.2.2.2        dynamic
   OverlayTunnel 4098    1.1.1.1        3.3.3.3        dynamic


VXLAN 100
   Symmetric property  : FALSE
   Router Interface    : -
   Extend VLAN        : 200
   VTEP Adjacency Count: 2
   VTEP Adjacency List :
   Interface            Source IP      Destinaton IP   Type
   -------------------- --------------- --------------- -------
   OverlayTunnel 4099    1.1.1.1        4.4.4.4        dynamic
      OverlayTunnel 4100    1.1.1.1        5.5.5.5        dynamic
```

Field description:

Field	Description
VXLAN Total Count	Number of current VXLAN instances
VXLAN Capacity	Number of VXLAN instances that can be configured on the device
Symmetric property	Whether the VXLAN instance is a symmetric instance
Router Interface	Name of the gateway interface associated with the VXLAN instance
Extend VLAN	VLAN associated with the VXLAN instance
VTEP Adjacency Count	Number of tunnels associated with the VXLAN instance
VTEP Adjacency List	List of tunnels associated with the VXLAN instance
Interface	Name of the tunnel interface associated with the VXLAN instance
Source IP	Source VTEP address of the VXLAN tunnel
Destination IP	Destination VTEP address of the VXLAN tunnel
Type	Type of the VXLAN tunnel

2. Run the **show vxlan** *vni-number* command to display the configuration and status of VXLAN 1.

```
Ruijie#show vxlan 1

VXLAN 1

   Source Address     : 1.1.1.1

   Multicast Group    : 234.1.1.1

   Extend VLAN        : 100

   VTEP Adjacency Count: 2
```

```
VTEP Adjacency List :

Interface            Source IP      Destinaton IP   Type

---------------------- --------------- --------------- -------

OverlayTunnel 4097    1.1.1.1        2.2.2.2        dynamic

OverlayTunnel 4098    1.1.1.1        3.3.3.3        dynamic
```

Field description:

Field	Description
Symmetric property	Whether the VXLAN instance is a symmetric instance
Router Interface	Name of the gateway interface associated with the VXLAN instance
Extend VLAN	VLAN associated with the VXLAN instance
VTEP Adjacency Count	Number of tunnels associated with the VXLAN instance
VTEP Adjacency List	List of tunnels associated with the VXLAN instance
Interface	Name of the tunnel interface associated with the VXLAN instance
Source IP	Source VTEP address of the VXLAN tunnel
Destination IP	Destination VTEP address of the VXLAN tunnel
Type	Type of the VXLAN tunnel

Prompts N/A

Platform Description N/A

2.27 show vxlan arp suppress

Use this command to display the VXLAN ARP suppression status on a device.

show vxlan arp suppress [vni *vni-number* **]**

Parameter Description

Parameter	Description
vni *vni-number*	Displays the ARP information of a specified VXLAN. The value range of *vni-number* is 1 to 16,777,215.

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples Run the **show vxlan arp suppress** command to check whether the VXLAN ARP suppression function is enabled on the device.

```
Ruijie#show vxlan arp suppress
GLOBAL ARP-SUPPRESS: OFF

ARP Suppress Detail:
VXLAN     VNI Configure    Effect Configure
---------- ----------------- -----------------
2           -               -
13          -               -
100       Enable          Enable
2000        -               -
```

Field description:

Field	Description
GLOBAL ARP-SUPPRESS	Status of the global ARP suppression
VXLAN	ID of a VXLAN instance
VNI Configure	VNI-based ARP suppression configuration
Effect Configure	Status of ARP suppression taking effect on a VNI (ARP suppression takes effect on a VNI after the global ARP suppression or VNI-based ARP suppression is enabled)

Verification N/A

2.28 show vxlan debug detail

Use this command to display specified debugging information about VXLANs.

show vxlan debug detail

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays specified debugging information about all VXLANs.

```
Ruijie(config)#show vxlan debug detail
Debug entry: 1.
Debug nsm_ip: 0.0.0.0.
Debug mac: 0000.0000.0000.
Debug route: 0.
Debug overlayTunnel: 0.
Debug overlayRouter: 0.
Debug ethernet intf: - .
```

Prompts N/A

Platform Description N/A

2.29 show vxlan ethernet

Use this command to display information about Ethernet interfaces of a VXLAN.

show vxlan ethernet { **interface** | **vlan** [*vid*] | **vni** [*vni-number*] }

Parameter Description

Parameter	Description
interface	Displays information about Ethernet interfaces.
vlan [*vid*]	Displays information about Ethernet interfaces associated with a VLAN. The *vid* ranges from 1 to 4094.
vni [*vni-number*]	Displays information about Ethernet interfaces associated with a VNI. The VNI ranges from 1 to 16777215.

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays information about all Ethernet interfaces associated with a VXLAN instance.

```
Ruijie(config)#show vxlan ethernet vni
VLAN  Interface   VXLAN    State
----- ----------- -------- -----
50    Te0/3      1001    DOWN
50    Te0/10     1001    DOWN
50    Te0/18     1001    DOWN
50    Fo0/49     1001    UP
```

Field description:

Field	Description
VLAN	VLAN ID
Interface	Name of an Ethernet interface
VXLAN	VXLAN instance
State	Status of an Ethernet interface

Prompts N/A

Platform Description N/A

2.30 show vxlan global

Parameter Description Use this command to display global VXLAN information, including the VTEP IP address and virtual MAC address.

show vxlan global

Defaults N/A

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide This command allows you to query the loopback port bound to the VTEP, the VTEP IP address, and virtual MAC address of the global anycast gateway on the current device.

Configuration Examples Run the **show vxlan global** command to display global VXLAN information.

```
Ruijie#show vxlan global
Local switch vtep ip: 3.3.3.3.
  Binds with interface loopback 1, line protocol is UP.
vxlan gateway synchronize is OFF.
Anycast mac: 0000.1234.5678 .
  1 overlayrouters enable anycast .
```

Prompts N/A

Platform Description N/A

2.31 show vxlan log

Use this command to display key records about the operation of the VXLAN process.

show vxlan log

Parameter Description N/A

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays key records about the operation of the VXLAN process.

```
Ruijie#show vxlan log
2018-05-17 10:33:18 RECV from RDND   : [RDND_E_STAT_READY]
2018-05-17 10:33:18 cli is fast reboot
2018-05-17 10:33:18 nsm connect succeed
2018-05-17 10:33:18 nsm init succeed
2018-05-17 10:33:18 CONNECT to LSM.
2018-05-17 10:33:18 CONNECT to BRIDGE.
2018-05-17 10:33:18 CONNECT to TCPIP
2018-05-17 10:33:18 RECV from BRIDGE : [MAC_EVENT_SYNC_REQ]:SOURCE_BGP
```

```
2018-05-17 10:33:18 RECV from LSM    : [INTF_EVENT_SYNC_DATA_REQ]
2018-05-17 10:33:18 RECV from LSM    : [LSM_DATA_ORIGIN_CREATOR]
2018-05-17 10:33:18 SEND to   LSM    : [LSM_DATA_ORIGIN_CREATOR_OVER]
2018-05-17 10:33:18 RECV FROM TCPIP  : [NET_MSG_SYNC_DATA_BEGIN]
2018-05-17 10:33:18 RECV from LSM    : [INTF_EVENT_SYNC_DATA_REQ]
2018-05-17 10:33:18 RECV from LSM    : [LSM_DATA_ORIGIN_LAST]
2018-05-17 10:33:18 SEND to   LSM    : [LSM_DATA_ORIGIN_LAST_OVER]
2018-05-17 10:33:18 RECV from BRIDGE : [VLAN_EVENT_SYNC_DATA_BEGIN]
2018-05-17 10:33:18 RECV from BRIDGE : [VLAN_EVENT_SYNC_DATA_END]
2018-05-17 10:33:18 RECV from LSM    : [INTF_EVENT_SYNC_DATA_BEGIN]
```

Prompts N/A

Platform Description N/A

2.32 show vxlan mac

Use this command to display the MAC address information about a VXLAN.

show vxlan mac [[**address** *mac-address*] [**vni** *vni-number*] [**remote | local**]]

Parameter Description

Parameter	Description
vni *vni-number*	Displays MAC address information about a specified VXLAN. The value of *vni-number* ranges from 1 to 16,777,215.
address *mac-address*	Displays information about a specified MAC address. The format is xxxx.xxxx.xxxx.
remote	Displays information about the remote MAC address.
local	Displays information about the local MAC address.

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples 1. The following example displays MAC address information about all VXLAN instances.

```
Ruijie(config)#show vxlan mac
Vxlan      MAC Address        Type    Location Interface                  Vlan
----------  ------------------ -------- -------- ------------------------------
```

```
------
     1    0000.1111.1111      STATIC   REMOTE   OverlayTunnel 1             -
     1    0000.1111.2222      STATIC   REMOTE   OverlayTunnel 1             -
     1    0000.2222.2222      STATIC   LOCAL    GigabitEthernet 0/1          1
     1    0000.5555.5555      STATIC   LOCAL    GigabitEthernet 0/1          1
```

Field description:

Field	Description
VXLAN	VXLAN instance ID.
MAC Address	MAC address
Type	Type of the MAC address
Location	Whether an entry is a remote or local entry
Interface	L2 egress of the MAC address
Vlan	VLAN instance

2. The following example displays the VXLAN MAC address information about the address 0000.2222.2222.

```
Ruijie# show vxlan mac address 0000.2222.2222 vni 1
Vxlan      MAC Address         Type     Location Interface                   Vlan
----------  ------------------- -------- -------- ------------------------------
------
     1    0000.2222.2222      STATIC   LOCAL    GigabitEthernet 0/1          1
```

Field description:

Field	Description
VXLAN	VXLAN instance
MAC Address	MAC address
Type	Type of the MAC address
Location	Whether an entry is a remote or local entry
Interface	L2 egress of the MAC address
Vlan	VLAN instance

Prompts N/A

Platform Description N/A

2.33 show vxlan mac-active

Use this command to display active VXLAN MAC entries.

show vxlan mac-active [**vni** *vni-number* | **local** | **remote**]

Parameter Description

Parameter	Description
vni *vni-number*	Displays the MAC entries of a specified VNI. The value of *vni-number* ranges from 1 to 16,777,215.
remote	Displays the remote MAC entry (MAC entry synchronized via a protocol).
local	Displays the local MAC entry.

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays all active VXLAN MAC entries.

```
Ruijie(config)#show vxlan mac-active
VXLAN    MAC Address    Type     Location VTEP-IP Address Interface   Source
-------- -------------- --------- -------- --------------- ------------ -------
1       0000.3000.0017  dynamic   local    0.0.0.0        Te0/25       SS
1       0000.3000.0312  protocol  remote   2.2.2.2        Ot6145       BGP
1       0000.4000.0311  protocol  remote   2.2.2.2        Ot6145       BGP
1       0000.5000.0312  protocol  remote   2.2.2.2        Ot6145       BGP
1       0000.8888.9999  protocol  local    0.0.0.0        -           VXLAN
2       0000.8888.9999  protocol  local    0.0.0.0        -           VXLAN
10      0000.3000.0017  dynamic   local    0.0.0.0        Te0/25       SS
10      0000.8888.9999  protocol  local    0.0.0.0        -           VXLAN
100     0000.8888.9999  protocol  local    0.0.0.0        -           VXLAN
count: 9
```

Field description:

Field	Description
VXLAN	VXLAN instance
MAC Address	MAC address
Type	Type of the MAC address
Location	Whether an entry is a remote or local entry
VTEP-IP Address	Next-hop VTEP IP address of a MAC entry
Interface	L2 egress of a MAC entry
Source	Data source
count	Number of displayed MAC entries

Prompts N/A

Platform Description N/A

2.34 show vxlan mac-bgp

Use this command to display remote VXLAN MAC entries synchronized via BGP.

show vxlan mac-bgp [**vni** *vni-number*]

Parameter Description

Parameter	Description
vni *vni-number*	Displays the remote VXLAN MAC entry of a specified VNI. The value of *vni-number* ranges from 1 to 16,777,215.

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays all remote VXLAN MAC entries synchronized via BGP.

```
Ruijie(config)#show vxlan mac-bgp
VXLAN    MAC Address    VTEP-IP Address Interface
-------- -------------- --------------- ------------
1       0000.3000.0312  2.2.2.2         Ot6145
1       0000.4000.0311  2.2.2.2         Ot6145
1       0000.5000.0312  2.2.2.2         Ot6145
```

Field description:

Field	Description
VXLAN	VXLAN instance
MAC Address	MAC address
VTEP-IP Address	Next-hop VTEP IP address of a MAC entry
Interface	L2 egress of a MAC entry

Prompts N/A

Platform Description N/A

2.35 show vxlan mac-log

Use this command to display operation records of a VXLAN MAC entry.

show vxlan mac-log { **all** | **vni** *vni-number* | **mac** *mac-address* | **vni** *vni-number* **mac** *mac-address* | **status** }

Parameter Description

Parameter	Description
all	Displays operation records of all MAC entries.
vni *vni-number*	Displays MAC entry operation records of a specified VNI. The *vni-number* ranges from 1 to 16777215.
mac *mac-address*	Displays MAC entry operation records of a specified MAC address. The format is xxxx.xxxx.xxxx.
vni *vni-number* **mac** *mac-address*	Displays MAC entry operation records of a specified VNI and MAC address. The *vni-number* ranges from 1 to 16777215. The format of MAC address is xxxx.xxxx.xxxx.
status	Displays the status of the MAC entry operation recording function.

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays operation records of all MAC entries.

```
Ruijie#show vxlan mac-log all
Vxlan mac log count: 20

VNI: 1  MAC: 0000.1234.5678
      1  add_from_bridge    2  add_from_BGP       3  add_to_bridge      4
add_from_bridge

VNI: 1  MAC: 00d0.f822.33f4
      1  add_from_bridge    2  add_from_BGP       3  add_to_bridge      4
add_from_bridge

VNI: 30  MAC: 0000.1234.5678
      1  add_from_bridge    2  add_from_BGP       3  add_to_bridge      4
add_from_bridge
```

```
VNI: 4013  MAC: 0000.1234.5678
      1  add_from_BGP       2  add_to_bridge      3  add_from_bridge

VNI: 4013  MAC: 0000.1236.54ab
      1  add_router_mac     2  add_to_BGP         3  del_router_mac     4
del_to_BGP         5  add_router_mac
      6  add_to_BGP
```

Field description:

Field	Description
Vxlan mac log count	Total number of displayed VXLAN MAC entry operation records
VNI: *vni-number* MAC: *mac-address*	MAC entry operation records of a specified VNI and MAC address

Prompts N/A

Platform Description N/A

2.36 show vxlan nd suppress

Use this command to display whether the IPv6 ND suppression function is enabled on a device.

show vxlan nd suppress [**vni** *vni-number*]

Parameter Description

Parameter	Description
vni-number	Displays the IPv6 ND suppression status of a specified VXLAN. The value of *vni-number* ranges from 1 to 16,777,215.

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays whether the IPv6 ND suppression function is enabled on the device.

```
Ruijie#show vxlan nd suppress
GLOBAL ND-SUPPRESS: OFF

ND Suppress Detail:
VXLAN     VNI Configure    Effect Configure
```

```
---------- ----------------- -----------------
2          -                 -
13         -                 -
100       Enable
2000       -                 -
```

Field description:

Field	Description
GLOBAL ND-SUPPRESS	Status of the global IPv6 ND suppression function
VXLAN	ID of a VXLAN instance
VNI Configure	Configuration of VNI-based IPv6 ND suppression
Effect Configure	Status of IPv6 ND suppression taking effect on a VNI (IPv6 ND suppression takes effect on a VNI after the global IPv6 ND suppression or VNI-based IPv6 ND suppression is enabled)

Prompts N/A

Platform Description N/A

2.37 show vxlan overlaytunnel route

Use this command to display routing information of a tunnel.

show vxlan overlaytunnel route [**interface** *interface-name*] [**detail**]

Parameter Description

Parameter	Description
interface *interface-name*	Displays routing information of a specified tunnel interface.
detail	Displays details about a tunnel route.

N/A

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples Run the **show vxlan overlaytunnel route** command to display routing information of all tunnels.

```
Ruijie# show vxlan overlaytunnel route
Overlaytunnel 6145 source: 4.4.4.4 destination: 1.1.1.1
       nexthop: 100.1.1.2      interface: TenGigabitEthernet 0/1

Ruijie#
```

Prompts N/A

Platform Description N/A

2.38 show vxlan route-active

Use this command to display active VXLAN ARP entries.

show vxlan route-active [**count** | **vrf** *vrf-name* | **global-vrf** | **vni** *vni-number* | **local** | **remote**]

Parameter Description

Parameter	Description
count	Displays the number of ARP entries.
vrf *vrf-name*	Displays ARP entries of a specified VRF instance.
global-vrf	Displays ARP entries of the global VRF instance.
vni *vni-number*	Displays ARP entries of a specified VNI. The *vni-number* ranges from 1 to 16,777,215.
local	Displays the local ARP entry.
remote	Displays the remote ARP entry (ARP entry synchronized via a protocol).

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays all active VXLAN ARP entries.

(Note: The following font size is adjusted for full display.)

```
Ruijie(config)#show vxlan route-active
VRF                      VXLAN    IP Address     Location VTEP-IP Address
```

```
Interface    MAC Address    NH-MAC Address Source
------------------------------ -------- --------------- -------- ---------------
------------ -------------- -------------- -------------
vrf-z                        2       123.123.123.123 local    0.0.0.0        -
0000.8888.9999 0000.8888.9999 TCP-OR-PORT

SET-VNI: 100, FWD-VNI: 2, SVID: 0, Flags: 0x5
```

Field description:

Field	Description
VRF	VRF instance to which an ARP entry belongs
VXLAN	VXLAN instance to which the ARP entry belongs
IP Address	IP address of the ARP entry
Location	Whether an entry is a remote or local entry
VTEP-IP Address	Next-hop VTEP IP address of the ARP entry ("-" indicates the local ARP entry.)
Interface	L2 egress of the ARP entry
MAC Address	Host MAC address in the ARP entry
NH-MAC Address	Next-hop MAC address of the ARP entry
Source	Data source
SET-VNI	VNI used for advertising the ARP entry
FWD-VNI	Forwarding VNI of the ARP entry
SVID	VID of the ARP entry
Flags	Flag bit of the ARP entry

Prompts N/A

Platform Description N/A

2.39 show vxlan route-active ipv6

Use this command to display active VXLAN IPv6 ND entries.

show vxlan route-active ipv6 [**count** | **vrf** *vrf-name* | **global-vrf** | **vni** *vni-number* | **local** | **remote**]

Parameter Description

Parameter	Description
count	Displays the number of ND entries.
vrf *vrf-name*	Displays ND entries of a specified VRF instance.
global-vrf	Displays ND entries of the global VRF instance.

vni *vni-number*	Displays ND entries of a specified VNI. The *vni-number* ranges from 1 to 16,777,215.
local	Displays the local ND entry.
remote	Displays the remote ND entry (ND entry synchronized via a protocol).

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays all active VXLAN IPv6 ND entries.

(Note: The following font size is adjusted for full display.)

```
Ruijie(config)#show vxlan route-active ipv6
VRF                       VXLAN    IPv6 Address
Location VTEP-IP Address Interface   MAC Address    NH-MAC Address Source
------------------------------ --------
---------------------------------------------- -------- ---------------
------------ -------------- -------------- -------------
vrf-z                      2       132::1
local    0.0.0.0        -          0000.8888.9999 0000.8888.9999 TCP-OR-PORT

SET-VNI: 100, FWD-VNI: 2, SVID: 0, Flags: 0x5
```

Field description:

Field	Description
VRF	VRF instance to which an ND entry belongs
VXLAN	VXLAN instance to which the ND entry belongs
IP Address	IPv6 address of the ND entry
Location	Whether an entry is a remote or local entry
VTEP-IP Address	Next-hop VTEP IP address of the ND entry
Interface	L2 egress of the ND entry
MAC Address	Host MAC address in the ND entry
NH-MAC Address	Next-hop MAC address of the ND entry
Source	Data source
SET-VNI	VNI used for advertising the ND entry
FWD-VNI	Forwarding VNI of the ND entry
SVID	VID of the ND entry
Flags	Flag bit of the ND entry

Prompts N/A

Platform Description N/A

2.40 show vxlan route-bgp

Use this command to display VXLAN ARP entries synchronized via BGP.

show vxlan route-bgp [**count** | **vrf** vrf-name | **global-vrf** | **vni** *vni-number*]

Parameter Description

Parameter	Description
count	Displays the number of VXLAN ARP entries synchronized via BGP.
vrf vrf-name	Displays ARP entries of a specified VRF instance.
global-vrf	Displays ARP entries of the global VRF instance.
vni *vni-number*	Displays ARP entries of a specified VNI. The *vni-number* ranges from 1 to 16,777,215.

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays all VXLAN ARP entries synchronized via BGP.

(Note: The following font size is adjusted for full display.)

```
Ruijie(config)#show vxlan route-bgp

VXLAN   IP Address     VTEP-IP Address Interface   MAC Address   NH-MAC Address IS_GW

-------- --------------- --------------- ------------ -------------- -------------- -----

2       123.5.1.2      2.2.2.2        Ot6145      0000.8888.9999 0000.1111.2222 False
```

Field description:

Field	Description
VXLAN	VXLAN instance to which the ARP entry belongs
IP Address	IP address of the ARP entry
VTEP-IP Address	Next-hop VTEP IP address of the ARP entry
Interface	L2 egress of the ARP entry
MAC Address	Host MAC address in the ARP entry
NH-MAC Address	Next-hop MAC address of the ARP entry

IS_GW	Whether the entry is a gateway ARP entry

Prompts N/A

Platform Description N/A

2.41 show vxlan route-bgp ipv6

Use this command to display VXLAN ND entries synchronized via BGP.

show vxlan route-bgp ipv6 [**count** | **vrf** vrf-name | **global-vrf** | **vni** *vni-number*]

Parameter Description

Parameter	Description
count	Displays the number of VXLAN ND entries synchronized via BGP.
vrf vrf-name	Displays ND entries of a specified VRF instance.
global-vrf	Displays ND entries of the global VRF instance.
vni *vni-number*	Displays ND entries of a specified VNI. The *vni-number* ranges from 1 to 16,777,215.

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays all VXLAN ND entries synchronized via BGP.

(Note: The following font size is adjusted for full display.)

```
Ruijie(config)#show vxlan route-bgp ipv6

VXLAN    IPv6 Address                                VTEP-IP Address Interface    MAC Address    NH-MAC Address IS_GW

-------- ------------------------------------------- --------------- ------------ --------------

-------------- -----

2       132::1                                  2.2.2.2        Ot6145      0000.8888.9999 0000.1111.2222 False
```

Field description:

Field	Description
VXLAN	VXLAN instance to which the ND entry belongs
IP Address	IP address in the ND entry
VTEP-IP Address	Next-hop VTEP IP address of the ND entry

Interface	L2 egress of the ND entry
MAC Address	Host MAC address in the ND entry
NH-MAC Address	Next-hop MAC address of the ND entry
IS_GW	Whether the entry is a gateway ND entry

Prompts N/A

Platform Description N/A

2.42 show vxlan route-log

Use this command to display operation records of VXLAN ARP/IPv6 ND entries.

show vxlan route-log { **all** | **vni** *vni-number* | **ip** *ipv4-address* | **ipv6** *ipv6-address* | **vni** *vni-number* { **ip** *ipv4-address* | **ipv6** *ipv6-address* } | **status** }

Parameter Description

Parameter	Description
all	Displays operation records of all VXLAN ARP/IPv6 ND entries.
vni *vni-number*	Displays ARP/IPv6 ND entry operation records of a specified VNI. The *vni-number* ranges from 1 to 16,777,215.
ip *ipv4-address*	Displays ARP entry operation records of a specified IPv4 address.
ipv6 *ipv6-address*	Displays ND entry operation records of a specified IPv6 address.
vni *vni-number* { **ip** *ipv4-address* | **ipv6** *ipv6-address* }	Displays ARP/IPv6 ND entry operation records of a specified VNI and IP address. The *vni-number* ranges from 1 to 16,777,215.
status	Displays the status of the ARP/IPv6 ND entry operation recording function.

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays operation records of all ARP/IPv6 ND entries.

```
Ruijie#show vxlan route-log all
Vxlan route log count: 4
VNI: 30  IP: 30.0.0.1
       1  add_from_BGP       2  add_to_TCPIP       3  add_from_TCPIP
```

```
VNI: 30  IP: 30.30.30.1
      1  add_from_TCPIP     2  add_to_BGP        3  add_from_TCPIP

VNI: 4010  IP: 200.0.0.1
      1  add_from_TCPIP     2  add_from_TCPIP     3  add_to_BGP        4
add_from_TCPIP     5  del_to_BGP
      6  add_to_BGP        7  del_to_BGP        8  add_to_BGP        9
del_to_BGP        10 add_to_BGP

VNI: 4010  IP: 200.0.0.3
      1  add_from_TCPIP     2  add_to_BGP        3  add_from_TCPIP     4
del_to_BGP        5  add_to_BGP
      6  del_to_BGP        7  add_to_BGP        8  del_to_BGP        9
add_to_BGP
```

Field description:

Field	Description
Vxlan route log count	Total number of displayed VXLAN ARP entry operation records
VNI: *vni-num* IP: *ip-address*	ARP/ND entry operation records of a specified VNI and IP address

Prompts N/A

Platform Description N/A

2.43 show vxlan server

Use this command to display detailed status information about the VXLAN process.

show vxlan server [**database** | **router** | **tunnel** | **clien-info** *client-name*]

Parameter Description

Parameter	Description
database	Displays the VXLAN basic information and capacity configuration.
router	Displays the overlay router gateway information.
tunnel	Displays the overlay tunnel information.
clien-info *client-name*	Displays client information about the VXLAN process.

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays detailed status information about the VXLAN process.

```
Ruijie#show vxlan server
vxlan server pid : 5053
vxlan socket fd  : 10
vxlan proc status: cli-end cli-ready lsm-ready bri-vlan-ready ss-conn ss-capa
hb-master ef-conn ability ef-ready bgp-conn bgp-over tcpip-connect tcpip-end
tcpip-loc-end acl-conn bridge-conn bridge-mac-over sync-to-tcpip-over
sync-to-bridge-over tcpip-all-end ef-data-ready netconf-ready lsm-range-set
vxlan nsm status: nsm-init nsm-connect nsm-sync-end vxlan-to-nsm-over
nsm-to-ss-over
local mac address: l2mac 0000.1236.54aa, l3mac 0000.1236.54ab
vxlan start time : 2019-06-17 11:50:08
local system time: 2019-06-17 13:54:12
vxlan client BGP: (PID 1111, ID 2, Socket 28)
   Connection time: 2019-06-17 11:50:18
   MSG recv: 4, recv drop: 0, send: 7, send drop: 0
   TLV recv: 5, recv drop: 0, send: 14, send drop: 0

   send-buff-alloc-cnt: 0, send-buff-free-cnt: 0

   send-buff-tlv-add-cnt: 0, send-buff-tlv-free-cnt: 0,
send_buff_tlv_inlist_cnt : 0
```

Field description:

Field	Description
vxlan server pid	ID of the VXLAN process
vxlan socket fd	Socket descriptor of the VXLAN process
vxlan proc status	Status of the VXLAN process
vxlan nsm status	Connection status of the VXLAN and NSM
local mac address	MAC address of the local device
vxlan start time	Startup time of the VXLAN process
local system time	Current system time
vxlan client	Statistics of the VXLAN client

Prompts N/A

Platform Description N/A

2.44 show vxlan storm-control

Use this command to display VXLAN storm control of a VXLAN tunnel.

show vxlan storm-control [**vni** *vni-number*]

Parameter Description

Parameter	Description
vni *vni-number*	Displays the VXLAN traffic statistics of a specified VXLAN tunnel. The value range of *vni-number* is 1 to 16,777,215.

Defaults

N/A

Command Mode

Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level

14

Usage Guide

N/A

Configuration Examples

Run the **show vxlan storm-control** command to display VNI-based storm control configuration.

```
Ruijie#show vxlan storm-control vni 900
VXLAN                 Broadcast Control Multicast Control Unicast Control
------------------------ ----------------- ----------------- ---------------
900                   9600 pps        Disabled        Disabled
Ruijie#show vxlan storm-control
VXLAN                 Broadcast Control Multicast Control Unicast Control
------------------------ ----------------- ----------------- ---------------
1                    Disabled        Disabled        Disabled
20                   Disabled        Disabled        Disabled
30                   Disabled        Disabled        Disabled
40                   Disabled        Disabled        Disabled
50                   Disabled        Disabled        Disabled
90                   Disabled        Disabled        Disabled
900                  9600 pps        Disabled        Disabled
Ruijie#
```

Prompts

N/A

Platform Description N/A

2.45 show vxlan subport

Use this command to display information about VXLAN subinterfaces.

show vxlan subport { **all** | **vni** *vni-number* | **interface** *interface-name* }

Parameter Description

Parameter	Description
all	Displays information about all subinterfaces.
vni *vni-number*	Displays information about all subinterfaces encapsulating a specified VNI. The *vni-number* ranges from 1 to 16,777,215.
interface *interface-name*	Displays information about subinterfaces of a specified interface.

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays information about all subinterfaces.

```
Ruijie# show vxlan subport all
Interface    VLAN  VXLAN    Main Interface Valid Admin Status Link Status  Proto
Status
------------ ----- -------- -------------- ----- ------------ ------------
------------
Te0/49.1     10    100      Te0/49         Y      UP          DOWN        DOWN
```

Field description:

Field	Description
Interface	Name of a subinterface
VLAN	ID of a VLAN encapsulated by the subinterface
VXLAN	VXLAN instance encapsulated by the subinterface
Main Interface	Name of the main interface to which the subinterface belongs
Valid	Whether the VXLAN encapsulation of the subinterface is valid
Admin Status	Management status of the subinterface

Link Status	Link status of the subinterface
Proto Status	Protocol status of the subinterface

Prompts N/A

Platform Description N/A

2.46 show vxlan udp-port

Use this command to display the VXLAN UDP destination port.

show vxlan udp-port

Parameter Description N/A

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples Run the **show vxlan udp-port** command to display the VXLAN UDP destination port.

```
Ruijie#show vxlan udp-port

VXLAN UDP Destination Port: 4789
```

Field description:

Field	Description
VXLAN UDP Destination Port	VXLAN UDP destination port ID

Prompts N/A

Platform N/A

Description

2.47 show vxlan vni-statistics

Use this command to display VNI traffic statistics.

show vxlan vni-statistics { **all** | **vni** *vni-number* }

Parameter Description

Parameter	Description
all	Displays traffic statistics of all VNIs.
vni *vni-number*	Displays traffic statistics of a specified VNI. The value of *vni-number* ranges from 1 to 16,777,215.

Parameter Description N/A

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays traffic statistics of VNI 3.

```
Ruijie# show vxlan vni-statistics vni 3
VXLAN 3:
   10 seconds input rate 80 bits/sec, 1 packets/sec
   10 seconds output rate 8000 bits/sec, 100 packets/sec
   10 packets input, 100 bytes
   1000 packets output, 10000 bytes
```

Prompts N/A

Platform Description N/A

2.48 show vxlan vrf

Use this command to display VXLAN instances of a VRF instance.

show vxlan vrf { **all** | **global-vrf** | **vrf-name** *vrf-name* }

Parameter Description

Parameter	Description
all	Displays VXLAN instances of all VRF instances.
global-vrf	Displays VXLAN instances of the global VRF instance.
vrf-name *vrf-name*	Displays VXLAN instances of a specified VRF instance.

Parameter Description N/A

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays VXLAN instances of all VRF instances.

```
Ruijie# show vxlan vrf all
VRF                          Symmetric VXLAN      VXLAN
------------------------------ --------------------- ----------------------
vrf-z                        1677    (Or1677)     100     (Or100)
                                                  1002    (Or1002)
```

Field description:

Field	Description
VRF	VRF instance name
Symmetric VXLAN	Symmetric VXLAN (L3-VNI) under the VRF instance and the name of the gateway associated with the VRF instance
VXLAN	Asymmetric VXLAN (L2-VNI) under the VRF instance and the name of the gateway associated with the VRF instance

Prompts N/A

Platform Description N/A

2.49 show vxlan vtep-log

Use this command to display operation records relevant to a VXLAN tunnel.

show vxlan vtep-log { **all** | **vni** *vni-number* | **ip** *ip-address* | **vni** *vni-number* **ip** *ip-address* | **status** }

Parameter Description

Parameter	Description
all	Displays operation records relevant to all VXLAN tunnels.
vni *vni-number*	Displays operation records relevant to the VXLAN tunnel of a specified VNI. The *vni-number* ranges from 1 to 16,777,215.
ip *ip-address*	Displays operation records relevant to the VXLAN tunnel of a specified VTEP IP address.
vni *vni-number* **ip** *ip-address*	Displays operation records relevant to the VXLAN tunnel of a specified VNI and VTEP IP address. The *vni-number* ranges from 1 to 16,777,215.
status	Displays the status of the VXLAN tunnel operation recording function.

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays operation records relevant to all VXLAN tunnels.

```
Ruijie#show vxlan vtep-log all
Vxlan vtep log count: 4

VNI: 0  VTEP-IP: 2.2.2.2
       1  add_to_lsm         Wed Dec 12 10:56:20 2018
       2  add_from_lsm       Wed Dec 12 10:56:20 2018
       3  vtep_add_to_ss      Wed Dec 12 10:56:20 2018
       4  vtep_add_to_ss      Wed Dec 12 10:56:22 2018

VNI: 1  VTEP-IP: 2.2.2.2
       1  add_from_BGP        Wed Dec 12 10:56:20 2018
       2  add_cache          Wed Dec 12 10:56:20 2018
       3  asso_add_to_ss      Wed Dec 12 10:56:20 2018
       4  del_cache          Wed Dec 12 10:56:20 2018

VNI: 2  VTEP-IP: 2.2.2.2
       1  add_from_BGP        Wed Dec 12 10:56:20 2018
       2  add_cache          Wed Dec 12 10:56:20 2018
       3  asso_add_to_ss      Wed Dec 12 10:56:20 2018
       4  del_cache          Wed Dec 12 10:56:20 2018
```

```
VNI: 100  VTEP-IP: 2.2.2.2
       1  add_from_BGP        Wed Dec 12 10:56:20 2018
       2  add_cache           Wed Dec 12 10:56:20 2018
       3  asso_add_to_ss      Wed Dec 12 10:56:20 2018
       4  del_cache           Wed Dec 12 10:56:20 2018
```

Field description:

Field	Description
Vxlan vtep log count	Total number of displayed operation records relevant to VXLAN tunnels
VNI: *vni-number* VTEP-IP: *ip-address*	Operation records relevant to VXLAN tunnels of a specified VNI and VTEP IP address

Prompts N/A

Platform Description N/A

2.50 show vxlan vtep-nbr

Use this command to display information about a VTEP neighbor.

show vxlan vtep-nbr [**dip** *ip-address*]

Parameter Description

Parameter	Description
dip *ip-address*	Displays information about the VTEP neighbor of a specified DIP.

Command Mode Privileged EXEC mode, global configuration mode, and interface configuration mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays information about all VTEP neighbors.

```
Ruijie# show vxlan vtep-nbr
VTEP-IP Address Interface   MAC Count ARP Count ND Count  ADJ Count
--------------- ------------ --------- --------- --------- ---------
2.2.2.2        Ot6145      3        1        0        3
```

Field description:

Field	Description
VTEP-IP Address	IP address of the peer VTEP
Interface	Name of the tunnel interface connecting to the peer VTEP
MAC Count	Number of EVPN-synchronized MAC entries with the next hop of the peer VTEP IP address
ARP Count	Number of EVPN-synchronized ARP entries with the next hop of the peer VTEP IP address
ND Count	Number of EVPN-synchronized ND entries with the next hop of the peer VTEP IP address
ADJ Count	Number of associations between the tunnel connecting to the peer VTEP and the VXLAN instances

Prompts N/A

Platform Description N/A

2.51 source loopback

Use this command to bind a loopback port for a device. The IP address of this loopback port is used as the source IP address of the VXLAN and used to fill the source IP address field at the outer layer of VXLAN packets.
source loopback *loopback-port-id*

Use the **no** form of this command to delete the loopback port bound to the VXLAN instance.
no source loopback *loopback-port-id*

Parameter Description

Parameter	Description
loopback-port-id	Loopback port ID. The ID ranges from 0 to 2,147,483,647.

Defaults N/A

Command Mode VTEP configuration mode

Default Level 14

Usage Guide After the EVPN control plane starts, a loopback port needs to be bound for each VTEP. A VTEP IP address unique on the whole network needs to be configured for the loopback port, and is used as the source IP address of the VXLAN to fill the source IP address field at the outer layer of VXLAN packets.

Configuration Examples The following example binds loopback port 1.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vtep
Ruijie(config-vtep)#source loopback 1
```

Verification Run the **show vxlan global** command to display VTEP information configured on the current device.

```
Ruijie#show vxlan global
Local switch vtep ip: 1.1.1.1.
  Binds with interface loopback 1, line protocol is UP.
No anycast mac.
```

Prompts N/A

Common Errors The same IP address is configured for the loopback interfaces bound to different devices.

Platform Description N/A

2.52 storm-control

Use this command to configure storm control for a VXLAN instance.
storm-control { **broadcast** | **multicast** | **unicast** } [**pps** *pps-value* | **kbps** *kbps-value* | **mbps** *mbps-value*]

Use the **no** form of this command to cancel storm control.
no storm-control { **broadcast** | **multicast** | **unicast** } [**pps** *pps-value* | **kbps** *kbps-value* | **mbps** *mbps-value*]

Parameter Description

Parameter	Description
pps-value	Indicates the rate limit value, in packets/second.
kbps-value	Indicates the rate limit value, in kbit/s.
mbps-value	Indicates the rate limit value, in Mbit/s

Defaults No rate limit is configured for a VXLAN instance by default.

Command Mode VXLAN configuration mode

Default Level 14

Usage Guide

1. If VNI-based storm control is required, you can configure storm control rate limit on a VXLAN instance.
2. If the storm control rate limit is set to 0, packets of the specified type will not flooded or broadcast in the VXLAN instance.

If storm control is configured on a VXLAN instance, the unit of the storm control rate limit must be the same for the broadcast, multicast, and unicast packets. If the unit is set to pps for broadcast packets, the unit for multicast and unicast packets does not need to be set, but must be set to pps if required.

Configuration Examples The following example configures storm control for VXLAN 1.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vxlan 1
Ruijie(config-vxlan)#storm-control broadcast pps 9600
Ruijie(config-vxlan)#storm-control multicast pps 8600
Ruijie(config-vxlan)#storm-control unicast pps 7600
```

Verification Run the **show vxlan storm-control vni 1** command to display the storm control configuration.

```
Ruijie# show vxlan storm-control vni 1
VXLAN                 Broadcast Control Multicast Control Unicast Control
------------------------ ----------------- ----------------- ---------------
1                     9600 pps         8600 pps         7600 pps
```

Prompts N/A

Common Errors N/A

Platform Description N/A

2.53 symmetric

Use this command to set the symmetric attribute of an instance.
symmetric

Use the **no** form of this command to cancel the symmetric attribute of the instance.
no symmetric

Parameter Description

Parameter	Description
N/A	N/A

Defaults VXLAN instances are asymmetric by default.

Command Mode VXLAN configuration mode

Default Level 14

Usage Guide Only one symmetric instance can be configured on a VRF instance. Different VXLAN instances can associate with VRF instances by binding Overlay router interfaces. If you attempt to configure multiple symmetric instances on a VRF instance, the configuration fails.

This command is mutually exclusive to the **vxlan gateway synchronize** command. After the former is configured, the latter is unavailable. Likewise, after the latter is configured, the former is unavailable.

Configuration Examples The following example configures VXLAN 1 as a symmetric instance.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vxlan 1
Ruijie(config-vxlan)#symmetric
```

Verification Run the **show vxlan** *vni-number* command to display the symmetric attribute.

```
Ruijie#show vxlan 1
VXLAN 1
```

```
Symmetric property  : TRUE
Router Interface    : -
Extend VLAN         : -
VTEP Adjacency Count: 0
```

Prompts If different VXLAN instances are associated with the same VLAN, the following prompt is displayed:
Ruijie(config)#vxlan 1
Ruijie(config-vxlan)#symmetric
Ruijie(config)#vxlan 2
Ruijie(config-vxlan)#symmetric
Fail to configure symmetric. Another symmetric instance(vxlan 1) has belonged to VRF-default. And ONE VRF couldn't have two symmetric instances at the same time.

Common Errors Multiple symmetric instances are configured under the same VRF instance.

Platform Description N/A

2.54 tunnel destination

Use this command to set the destination IP address of an Overlay tunnel interface.
tunnel destination *ip-address*

Use the **no** form of this command to delete the destination IP address of an Overlay tunnel interface.
no tunnel destination [*ip-address***]**

Parameter Description

Parameter	Description
ip-address	Destination (peer) IP address of an Overlay tunnel interface

Defaults N/A

Command Overlay tunnel configuration mode

Mode

Default Level 14

Usage Guide Use this command to specify the destination (peer) IP address of an Overlay tunnel interface.

Configuration Examples The following example sets the destination IP address for an interface of Overlay tunnel 1 to 3.3.3.3.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config-vxlan)#tunnel-interface OverlayTunnel 1
Ruijie(config)# interface OverlayTunnel 1
Ruijie(config-if-OverlayTunnel 1)# tunnel destnation 3.3.3.3
```

Verification Run the **show running-config interface** command to display the interface configuration.

```
Ruijie#sh running-config interface OverlayTunnel 1

Building configuration...
Current configuration : 174 bytes

interface OverlayTunnel 1
 tunnel source 1.1.1.1
 tunnel destination 3.3.3.3
```

Prompts If an invalid IP address is configured, the following prompt is displayed:
Ruijie(config)#interface OverlayTunnel 1
Ruijie(config-if-OverlayTunnel 1)#tunnel destination 234.1.1.1
Fail to configure tunnel destination: invalid ip

Common Errors N/A

Platform Description N/A

2.55 tunnel source

Use this command to set the source (local) IP address of an Overlay tunnel.
tunnel source *ip-address*

Use the **no** form of this command to delete the source (local) IP address of an Overlay tunnel.
no tunnel source [*ip-address***]**

Parameter Description

Parameter	Description
ip-address	Source (local) IP address of an Overlay tunnel

Defaults N/A

Command Mode Overlay tunnel configuration mode

Default Level 14

Usage Guide Use this command to specify the source (local) IP address of an Overlay tunnel.

Configuration Examples The following example sets the source IP address of Overlay tunnel 1 to 1.1.1.1.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config-vxlan)#tunnel-interface OverlayTunnel 1
Ruijie(config)# interface OverlayTunnel 1
Ruijie(config-if-OverlayTunnel 1)# tunnel source 1.1.1.1
```

Verification Run the **show running-config interface** command to display the interface configuration.

```
Ruijie#sh running-config interface OverlayTunnel 1

Building configuration...
Current configuration : 174 bytes

interface OverlayTunnel 1
```

```
tunnel source 1.1.1.1
tunnel destination 3.3.3.3
```

Prompts If an invalid IP address is configured, the following prompt is displayed:
Ruijie(config)#interface OverlayTunnel 1
Ruijie(config-if-OverlayTunnel 1)#tunnel source 234.1.1.1
Fail to configure tunnel source: invalid ip

Common Errors N/A

Platform Description N/A

2.56 tunnel-interface

Use this command to associate a tunnel with a VXLAN instance (statically specify the VXLAN VTEP).
tunnel-interface *interface-name*

Use the **no** form of this command to delete the tunnel associated with the VXLAN instance (delete the statically specified VXLAN VTEP).
no tunnel-interface *interface-name*

Parameter Description

Parameter	Description
interface-name	Indicates an overlay tunnel interface.

Defaults N/A

Command Mode VXLAN configuration mode

Default Level 14

Usage Guide This command is used to statically specify a VXLAN VTEP.

Configuration Examples The following example associates VXLAN 1 with Overlay tunnel 1.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vxlan 1
Ruijie(config-vxlan)#tunnel-interface OverlayTunnel 1
```

Verification Run the **show vxlan** *vni-number* command to display information about the VXLAN tunnel associated with the VXLAN instance.

```
Ruijie#show vxlan 1
VXLAN 1
   Symmetric property  : FALSE
   Router Interface    : OverlayRouter 1 (non-anycast)
   Extend VLAN        : -
   VTEP Adjacency Count: 1
   VTEP Adjacency List :
   Interface            Source IP      Destinaton IP   Type
   ---------------------- --------------- --------------- -------

   OverlayTunnel 1       1.1.1.1        3.3.3.3        static
```

Prompts When a nonexistent overlay tunnel interface is associated, the following prompt is displayed:

```
Ruijie(config)#vxlan 1
Ruijie(config-vxlan)#tunnel-interface OverlayTunnel 100
                                                      ^
% Invalid input detected at '^' marker.
```

Common Errors N/A

Platform Description N/A

2.57 vni-counting enable (VTEP Configuration Mode)

Use this command to enable the global VNI traffic statistics function.

vni-counting enable

Use the **no** form of this command to disable the global VNI traffic statistics function.
no vni-counting enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults The global VNI traffic statistics function is disabled by default.

Command Mode VTEP configuration mode

Default Level 14

Usage Guide

1. After this command is configured, the VNI traffic statistics function is enabled on all VNIs.
2. When the global VNI traffic statistics function is configured (by running the **vni-counting enable** command in VTEP configuration mode), the VNI traffic statistics function is enabled on all VXLAN instances. When VXLAN instance–based VNI traffic statistics function is configured (by running the **vni-counting enable** command in VXLAN configuration mode), the VNI traffic statistics function is enabled only on the VXLAN instance. You can configure global VNI traffic statistics function or VXLAN instance–based VNI traffic statistics function to enable the VNI traffic statistics function on a VXLAN instance.

Configuration Examples The following example enables the global VNI traffic statistics function.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# vtep
Ruijie(config-vtep)# vni-counting enable
```

Verification Run the **show run** command to display the configuration.

Prompts

```
N/A
```

Common Errors N/A

Platform Description N/A

2.58 vni-counting enable (VXLAN Configuration Mode)

Use this command to enable the traffic statistics function on a VNI.
vni-counting enable

Use the **no** form of this command to disable the traffic statistics function on a VNI.
no vni-counting enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults The traffic statistics function is disabled on VNIs by default.

Command Mode VXLAN configuration mode

Default Level 14

Usage Guide

1. This command is configured in VXLAN configuration mode to enable the traffic statistics function on a specified VNI.
2. When the global VNI traffic statistics function is configured (by running the **vni-counting enable** command in VTEP configuration mode), the VNI traffic statistics function is enabled on all VXLAN instances. When VXLAN instance–based VNI traffic statistics function is configured (by running the **vni-counting enable** command in VXLAN configuration mode), the VNI traffic statistics function is enabled only on the VXLAN instance. You can configure global VNI traffic statistics function or VXLAN instance–based VNI traffic statistics function to enable the VNI traffic statistics function on a VXLAN instance.

Configuration Examples The following example enables the traffic statistics function on VXLAN 1.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vxlan 1
Ruijie(config-vxlan)# vni-counting enable
```

Verification Run the **show run** command to display the configuration.

Prompts If the number of VXLAN instances on which the VNI traffic statistics function is enabled reaches the maximum value, an error is displayed.

```
Failed to configure vni-counting: vni-counting capacity(1500 vxlans) is full.
```

Common Errors	N/A
Platform Description	N/A

2.59 vtep

Use this command to enter the VTEP configuration mode.

vtep

Use the **no** form of this command to delete all configurations in VTEP configuration mode.

no vtep

Parameter Description

Parameter	Description
N/A	N/A

Defaults	N/A
Command Mode	Global configuration mode
Default Level	14
Usage Guide	N/A

Configuration Examples

The following example enables a device to enter the VTEP configuration mode.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vtep
Ruijie(config-vtep)#
```

Verification	N/A
Prompts	N/A N/A
Common Errors	N/A
Platform Description	N/A

2.60 vxlan

Use this command to create a VXLAN instance or enter the VXLAN instance configuration mode.
vxlan *vni-number*

Use the **no** form of this command to delete a VXLAN instance.
no vxlan *vni-number*

Parameter Description

Parameter	Description
vni-number	Indicates the VNI. The value ranges from 1 to 16,777,215.

Defaults	N/A
Command Mode	Global configuration mode
Default Level	14
Usage Guide	N/A
Configuration	The following example creates or enters VXLAN 1.

```
Ruijie#configure terminal
```

Examples

```
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vxlan 1
Ruijie(config-vxlan)#
```

Verification

Run the **show vxlan** command to display information about all VXLAN instances.

```
Ruijie#show vxlan
VXLAN Total Count: 2
VXLAN Capacity   : 4000

VXLAN 1
   Symmetric property  : FALSE
   Router Interface    : -
   Extend VLAN        : 100
   VTEP Adjacency Count: 2
   VTEP Adjacency List :
   Interface            Source IP      Destinaton IP   Type
   ---------------------- --------------- --------------- -------
   OverlayTunnel 4097    1.1.1.1        2.2.2.2        dynamic
   OverlayTunnel 4098    1.1.1.1        3.3.3.3        dynamic


VXLAN 100
   Symmetric property  : FALSE
   Router Interface    : -
   Extend VLAN        : 200
   VTEP Adjacency Count: 2
   VTEP Adjacency List :
   Interface            Source IP      Destinaton IP   Type
   ---------------------- --------------- --------------- -------
   OverlayTunnel 4099    1.1.1.1        4.4.4.4        dynamic
   OverlayTunnel 4100    1.1.1.1        5.5.5.5        dynamic
```

Prompts

If the number of VXLAN instances reaches the maximum value, an error is displayed.

Fail to create vxlan: capacity is full

Common Errors

N/A

Platform Description	N/A

2.61 vxlan enhanced failover enable

Use this command to enable the VXLAN enhanced failover convergence function. Use the **no** form of this command to disable the VXLAN enhanced failover convergence function.

vxlan enhanced failover enable

no vxlan enhanced failover enable

Parameter Description

Parameter	Description
N/A	

Defaults The VXLAN enhanced failover convergence function is disabled by default.

Command Mode VTEP configuration mode

Default Level 14

Usage Guide In an EVPN VXLAN scenario, when multiple Network Interface Cards (NICs) of a server are connected to the TOR switch via BOND MODE 6 and the links between NICs and the TOR switch need to be switched, services will be interrupted due to network-side causes, and convergence and recovery should be implemented within seconds. After the **vxlan enhanced failover enable** command is executed, the convergence and recovery can be implemented within milliseconds in the case of layer-2 forwarding if links between NICs and the TOR switch are switched. Several seconds are still required for convergence and recovery in the case of layer-3 forwarding.

The function is disabled by default. It cannot be enabled in the presence of static tunnels but can be enabled only in pure EVPN VXLAN environment.

After this function is enabled, the EVPN MAC synchronization function cannot be disabled.

Configuration Examples The following example enables the VXLAN enhanced failover convergence function.

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#vtep
Ruijie(config-vtep)#vxlan enhanced failover enable
```

Verification Run the **show run** command to check whether the current configuration is successful.

Prompt Message N/A

Common Errors 1. The configuration will fail when the **vxlan enhanced failover enable** command is configured in the presence of static tunnels.
The error "static OverlayTunnel exists, vxlan enhanced failover enable cannot be configured" will be displayed.
2. After the **vxlan enhanced failover enable** command is configured, no static tunnel can be created.
The error "% vxlan enhanced failover enable configured, static OverlayTunnel cannot be created." will be displayed.

2.62 vxlan mac static

Use this command to set a static VXLAN MAC forwarding entry.
vxlan mac static *mac-address* **vni** *vni-number* **interface** *interface-name* [**vlan** *vid*]

Use the **no** form of this command to delete a static VXLAN MAC forwarding entry.
no vxlan mac static *mac-address* **vni** *vni-number* **interface** *interface-name* [**vlan** *vid*]

Parameter Description

Parameter	Description
mac-address	Indicates the MAC address. The format is xxxx.xxxx.xxxx.
vni-number	Indicates the VNI. The value ranges from 1 to 16,777,215.
interface-name	Indicates the name of the next-hop interface of the MAC entry. The interface can be an Ethernet port, aggregate port, or overlay tunnel interface.
vid	Indicates the VLAN identifier. The value ranges from 1 to 4094.

Defaults N/A

Command Mode Global configuration mode

Default Level 14

Usage Guide 1. This command is used to set a static VXLAN MAC forwarding entry. The next-hop interface must have been created when this command is configured. The next-hop interface cannot be a dynamic tunnel.
2. When the next-hop interface is not an overlay tunnel interface, *vid* must be set and the VID is not required for overlay tunnel interfaces.

Configuration Examples The following example configures two static VXLAN MAC forwarding entries for VNI 1.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vxlan mac static 0000.1111.1111 vni 1 interface OverlayTunnel 1
Ruijie(config)#vxlan mac static 0000.5555.5555 vni 1 interface GigabitEthernet 0/1
vlan 1
```

Verification Run the **show vxlan mac** command to check whether the VXLAN MAC forwarding entries exist.

```
Ruijie#show vxlan mac
Vxlan      MAC Address        Type    Location Interface                  Vlan
----------  ------------------- -------- -------- ------------------------------
------
     1    0000.1111.1111      STATIC   REMOTE   OverlayTunnel 1             -
     1    0000.1111.2222      STATIC   REMOTE   OverlayTunnel 1             -
     1    0000.2222.2222      STATIC   LOCAL    GigabitEthernet 0/1          1
     1    0000.5555.5555      STATIC   LOCAL    GigabitEthernet 0/1          1
```

Prompts N/A

Common Errors N/A

Platform Description N/A

2.63 vxlan mac-log

Use this command to configure operation recording for VXLAN MAC entries.
vxlan mac-log { **limit** *num* | **type** { **event** | **timestamp | nstime** } | **disable** | **enable** }

Use the **no** form of this command to restore the default operation recording configuration of VXLAN MAC entries.
default vxlan mac-log { **limit** | **type** }

Parameter Description

Parameter	Description
limit *num*	Indicates the upper limit of MAC entry operation records. The value ranges from 0 to 500,000.
type { **event**	**timestamp	nstime**}	Sets the data type of MAC entry operation records (event type, time type, or ns-level time type).
disable	Disables the function of MAC entry operation recording.

enable	Enables the function of MAC entry operation recording.

Defaults The MAC entry operation recording function is enabled by default. The record limit depends on the device version and the default data type is event type.

Command Mode Global configuration mode

Default Level 14

Usage Guide The configuration of this command cannot be displayed by the **show run** command.
This command does not support device restart. If the device is restarted, the default configuration is restored.

Configuration Examples The following example sets the type of MAC entry operation records to time type.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vxlan mac-log type timestamp
Ruijie(config)#
```

Verification Run the **show vxlan mac-log status** command to display the status of the MAC entry operation recording function.

```
Ruijie(config)#show vxlan mac-log status
Vxlan mac-log function
     status: ON
       type: timestamp
      count: 1  (limit 5000)
     memory: 384 Bytes
```

Prompts N/A

Common Errors N/A

Platform Description N/A

2.64 vxlan overlaytunnel carrier-delay

Use this command to set the status change delay for VXLAN tunnel protocols.
vxlan overlaytunnel carrier-delay up *time*

Use the **no** form of this command to restore the default status change delay of the VXLAN tunnel protocols.
no vxlan overlaytunnel carrier-delay up [*time*]

Parameter Description

Parameter	Description
up *time*	Indicates the delay required for a tunnel to go from the down state to up state. The unit is ms and the value range is <0–60000>.

Defaults The default value is 2000 ms.

Command Mode VTEP configuration mode

Default Level 14

Usage Guide This command is used to set the status change delay for VXLAN tunnel protocols. You can adjust the delay according to scenario requirements.

Configuration Examples The following example sets no status change delay for VXLAN tunnel protocols, that is, changes in the VXLAN tunnel protocol status take effect immediately.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vtep
Ruijie(config-vtep)# vxlan overlaytunnel carrier-delay up 0
```

Verification Run the **show run** command to display the current configuration of the device.

Prompts N/A

Common Errors N/A

Platform Description N/A

2.65 vxlan overlaytunnel counting enable

Use this command to enable the VXLAN tunnel statistics function.
vxlan overlaytunnel counting enable

Use the **no** form of this command to disable the VXLAN tunnel statistics function.

no vxlan overlaytunnel counting enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults The VXLAN tunnel statistics function is disabled by default.

Command Mode VTEP configuration mode

Default Level 14

Usage Guide This command is used to enable or disable the VXLAN tunnel statistics function.

Configuration Examples The following example enables the VXLAN tunnel statistics function.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vtep
Ruijie(config-vtep)# vxlan overlaytunnel counting enable
```

Verification Run the **show run** command to display the current configuration of the device.

Prompts N/A

Common Errors N/A

Platform Description N/A

2.66 vxlan overlaytunnel nexthop resolution prefix-length minimum

Use this command to configure the shortest route length that can be preferentially selected for a tunnel.

vxlan overlaytunnel nexthop resolution prefix-length minimum [*value-num*]

Use the **no** form of this command to cancel the configuration of the shortest route length that can be preferentially selected for a tunnel.

no vxlan overlaytunnel nexthop resolution prefix-length minimum [*value-num*]

Parameter

Parameter	Description

Description

value-num	Shortest route length that can be preferentially selected for a tunnel. The value ranges from 0 to 32. If this parameter is set to **0** by default if no value is specified.

Defaults The shortest route length is 0 by default, that is, the *value-num* parameter is set **0**.

Command Mode VTEP configuration mode

Default Level 14

Usage Guide Configure the shortest route length that can be preferentially selected for a tunnel to control the route preferentially selected for the DIP of the tunnel.

Configuration Examples The following example sets the shortest route length that can be preferentially selected for a tunnel to 32.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vtep
Ruijie(config-vtep)# vxlan overlaytunnel nexthop resolution prefix-length minimum
32
```

Verification Run the **show run** command to display the current device configuration.

```
–
```

Prompts N/A

Common Errors The configured value is out of range.

Platform Description N/A

2.67 vxlan range

Use this command to create VXLAN instances in batches or enter the VXLAN instance configuration mode.

vxlan range *vxlan-id-list*

Parameter Description

Parameter	Description
vxlan-id-list	VNI list, indicating VNIs of VXLAN instances created in batches. The value is a character string.

Defaults

N/A

Command Mode

Global configuration mode

Default Level

14

Usage Guide

You can use this command to create VXLAN instances in batches.

VXLAN instances cannot be deleted in batches, that is, the **no vxlan range** *vxlan-id-list* command is unavailable.

Configuration Examples

The following example creates or enters VXLANs 1, 2, 3, and 100.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vxlan range 1-3,100
Ruijie(config-vxlan-range)#
```

Verification

Run the **show vxlan** command to display information about all created VXLAN instances.

```
Ruijie#show vxlan
VXLAN Total Count: 2
VXLAN Capacity   : 4000

VXLAN 1
   Symmetric property  : FALSE
```

```
   Router Interface    : -
   Extend VLAN        : 100
   VTEP Adjacency Count: 2
   VTEP Adjacency List :
   Interface            Source IP      Destinaton IP   Type
   ---------------------- --------------- --------------- -------
   OverlayTunnel 4097    1.1.1.1        2.2.2.2        dynamic
   OverlayTunnel 4098    1.1.1.1        3.3.3.3        dynamic


VXLAN 100
   Symmetric property  : FALSE
   Router Interface    : -
   Extend VLAN        : 200
   VTEP Adjacency Count: 2
   VTEP Adjacency List :
   Interface            Source IP      Destinaton IP   Type
   ---------------------- --------------- --------------- -------
   OverlayTunnel 4099    1.1.1.1        4.4.4.4        dynamic
   OverlayTunnel 4100    1.1.1.1        5.5.5.5        dynamic
```

Prompts If the number of VXLAN instances reaches the maximum value, an error is displayed.
Fail to create vxlan: capacity is full

Common Errors N/A

Platform Description N/A

2.68 vxlan route-log

Use this command to configure operation recording for VXLAN ARP/ND entries.
vxlan route-log { **limit** *num* | **type** { **event** | **timestamp | nstime** } | **disable** | **enable** }

Use the **no** form of this command to restore the default operation recording configuration of VXLAN ARP/ND entries.

default vxlan route-log { **limit** | **type** }

Parameter Description

Parameter	Description
limit *num*	Indicates the upper limit of ARP/ND entry operation records. The value ranges from 0 to 500,000.
type { **event**	**timestamp	nstime**}	Sets the data type of ARP/ND entry operation records (event type, time type, or ns-level time type).
disable	Disables the function of ARP/ND entry operation recording.
enable	Enables the function of ARP/ND entry operation recording.

Defaults The ARP/ND entry operation recording function is enabled by default. The record limit depends on the device version and the default data type is event type.

Command Mode Global configuration mode

Default Level 14

Usage Guide The configuration of this command cannot be displayed by the **show run** command.
This command does not support device restart. If the device is restarted, the default configuration is restored.

Configuration Examples The following example sets the type of ARP/ND entry operation records to time type.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vxlan route-log type timestamp
Ruijie(config)#
```

Verification Run the **show vxlan route-log status** command to display the status of the ARP entry operation recording function.

```
Ruijie(config)#show vxlan route-log status
Vxlan route-log function
     status: ON
       type: timestamp
      count: 4  (limit 10000)
     memory: 1568 Bytes
```

Prompts N/A

Common N/A

Errors

Platform Description N/A

2.69 vxlan udp-port

Use this command to set the VXLAN UDP destination port.
vxlan udp-port *port-number*

Use the **no** form of this command to delete the VXLAN UDP destination port. After the port is deleted, the default value is restored.
no vxlan udp-port [*port-number***]**

Parameter Description

Parameter	Description
port-number	VXLAN UDP destination port. The port ID ranges from 0 to 65,535.

Defaults 4789 (allocated by IANA)

Command Mode Global configuration mode

Default Level 14

Usage Guide Optional. As the VXLAN UDP destination port used by devices of earlier versions may not be Port 4789, you can run this command to achieve compatibility. In addition, you can also run this command to customize the VXLAN UDP destination port.
Note: Modification of the UDP destination port takes effect after device restart. Therefore, save the configuration and restart the device.

Configuration Examples The following example sets the VXLAN UDP destination port to Port 5789.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.

Ruijie(config)#vxlan udp-port 5789
```

Verification Run the **show vxlan udp-port** command to display the VXLAN UDP destination port.

```
Ruijie#show vxlan udp-port

VXLAN UDP Destination Port: 5789
```

Prompts N/A

Common Errors N/A

Platform Description N/A

2.70 vxlan vtep-log

Use this command to configure the operation recording for VXLAN tunnels.
vxlan vtep-log { **limit** *num* | **type** { **event** | **timestamp | nstime** } | **disable** | **enable** }

Use the **no** form of this command to restore the default operation recording configuration of VXLAN tunnels.
default vxlan vtep-log { **limit** | **type** }

Parameter Description

Parameter	Description
limit *num*	Indicates the upper limit of operation records relevant to VXLAN tunnels. The value ranges from 0 to 500,000.
type { **event**	**timestamp	nstime**}	Sets the data type of operation records relevant to VXLAN tunnels (event type, time type, or ns-level time type).
disable	Disables the operation recording function for VXLAN tunnels.
enable	Enables the operation recording function for VXLAN tunnels.

Defaults The VXLAN tunnel–relevant operation recording function is enabled by default. The record limit depends on the device version and the default data type is time type.

Command Mode Global configuration mode

Default Level 14

Usage Guide The configuration of this command cannot be displayed by the **show run** command.
This command does not support device restart. If the device is restarted, the default configuration is restored.

Configuration Examples The following example sets the data type of operation records relevant to VXLAN tunnels to ns-level time type.

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#vxlan vtep-log type nstime
Ruijie(config)#
```

Verification Run the **show vxlan vtep-log status** command to display the status of the VXLAN tunnel–relevant operation recording function.

```
Ruijie(config)#show vxlan vtep-log status
Vxlan vtep-log function
     status: ON
       type: nstime
      count: 4  (limit 5000)
     memory: 2144 Bytes
```

Prompts N/A

Common Errors N/A

Platform Description N/A

3 RDMA Commands

3.1 clear cnp counters

Use this command to clear the CNP packet counter.

clear cnp counters [**interface** *interface-name*]

Parameter Description

Parameter	Description
interface	Indicates an interface name.

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide N/A

Configuration Examples The following example clears the CNP packet counter on interface TF 0/1.

```
Ruijie#clear cnp counters interface tf 0/1
```

3.2 clear nak counters

Use this command to clear the NAK packet counter.

clear nak counters [**interface** *interface-name*]

Parameter Description

Parameter	Description
interface	Indicates an interface name.

Command Mode Privileged EXEC mode

Default Level 14

Usage Guide N/A

Configuration The following example clears the NAK packet counter on interface TF 0/1.

Examples

```
Ruijie#clear nak counters interface tf 0/1
```

3.3 cnp cos

Use this command to configure the CoS value of CNP packets. Use the **no** form of this command to restore the default CoS value of CNP packets.

cnp cos *cos-value*

no cnp cos *cos-value*

Parameter Description

Parameter	Description
cos-value	CoS value of CNP packets. The value ranges from 0 to 7.

Command Mode Global configuration mode

Defaults The default CoS value of CNP packets is 6.

Default Level 14

Usage Guide N/A

Configuration Examples The following example configures the CoS value of the CNP packets to 5.

```
Ruijie(config)# cnp cos 5
```

3.4 cnp counting enable

Use this command to enable the CNP packet counting function. Use the **no** form of this command to disable the CNP packet counting function.

cnp counting enable

no cnp counting enable

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Interface configuration mode

Defaults The CNP packet counting function is disabled by default.

Default Level 14

Usage Guide N/A

Configuration Examples The following example enables the CNP packet counting function.

```
Ruijie(config)# interface tfGigabitEthernet 0/1
Ruijie(config-if-TFGigabitEthernet 0/1)# cnp counting enable
```

3.5 nak counting enable

Use this command to enable the NAK packet counting function. Use the **no** form of this command to disable the NAK packet counting function.

nak counting enable

no nak counting enable

Parameter Description

Parameter	Description
N/A	N/A

Command Mode Interface configuration mode

Defaults The NAK packet counting function is disabled by default.

Default Level 14

Usage Guide N/A

Configuration Examples The following example enables the NAK packet counting function.

```
Ruijie(config)# interface tfGigabitEthernet 0/1
Ruijie(config-if-TFGigabitEthernet 0/1)# nak counting enable
```

3.6 show cnp counters

Use this command to display the CNP packet statistics.

show cnp counters [**interface** *interface-name*]

Parameter Description

Parameter	Description

interface-name	Interface name

Command Mode Privileged EXEC mode, global configuration mode, interface configuration mode

Defaults N/A

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays the CNP packet statistics on interface TF 0/1.

```
Ruijie# show cnp counters interface tf 0/1
Interface         Input Packets   Output Packets
--------------- ---------------- ----------------
TF0/1                      10             20
```

3.7 show nak counters

Use this command to display the NAK packet statistics.

show nak counters [**interface** *interface-name*]

Parameter Description

Parameter	Description
interface-name	Interface name

Command Mode Privileged EXEC mode, global configuration mode, interface configuration mode

Defaults N/A

Default Level 14

Usage Guide N/A

Configuration Examples The following example displays the NAK packet statistics on interface TF 0/1.

```
Ruijie# show nak counters interface tf 0/1
Interface         Input Packets   Output Packets
--------------- ---------------- ----------------
TF0/1                      3              3
```