



**RG-N18000-X Series Switches**

**RGOS Command Reference, Release 11.3(1)B9**

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## Preface

Thank you for using our products. This manual matches the RGOS Release 11.3(1)B9.

## 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>
- Case Portal: <https://case.ruijienetworks.com>
- Community: <https://community.ruijienetworks.com>
- Technical Support Email: [service\\_rj@ruijienetworks.com](mailto:service_rj@ruijienetworks.com)
- Skype: [service\\_rj@ruijienetworks.com](https://www.skype.com/people/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
<b>boldface font</b>	Commands, command options, and keywords are in <b>boldface</b> .
<i>italic font</i>	Arguments for which you supply values are in <i>italics</i> .
[ ]	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

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1. Command Line Interface 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
<i>mode</i>	Mode of the command represented by the alias
<i>command-alias</i>	Command alias
<i>original-command</i>	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
```

```
globe configure mode alias:
```

```
def-route          ip route 0.0.0.0 0.0.0.0
```

```
192.168.1.1
```

#### Related Commands

Command	Description
<b>show aliases</b>	Displays the aliases settings.

**Platform** N/A  
**Description**

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

**Defaults** N/A

**Command** Global configuration mode.  
**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	Description
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 use 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
<b>enable secret</b>	Sets the CLI-level password.

**Platform** N/A.  
**Description**

## 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
<i>mode</i>	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** The following example displays the command alias in privileged EXEC mode:

**Examples**

```
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 N/A.  
Description

## 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.

<i>message</i>	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
<i>c</i>	Separator of the message. Delimiters are not allowed in the message.
<i>message</i>	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** The following example configures a prompt message for reverse Telnet session.

**Examples** 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 remove the setting.

**banner login** *c message c*

**no banner login**

**Parameter  
Description**

Parameter	Description
<i>c</i>	Separator of the message contained in the login banner. Delimiters are not allowed in the MOTD.
<i>message</i>	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** The following example configures a login banner.

**Examples** 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**

The following example configures the MOTD.

**Examples**

```
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
<i>c</i>	Separator of the message. Delimiters are not allowed in the message.
<i>message</i>	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** The following example configures the prompt-timeout message to notify timeout.**Examples** 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
<i>c</i>	Separator of the message. Delimiters are not allowed in the message.
<i>message</i>	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** The following example configures the banner slip-ppp message for the SLIP/PPP session.

**Examples**

```
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** The following example enters global configuration mode.

**Examples**

```
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
<b>enable</b>	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
<i>session-id</i>	Telnet Client session ID.

**Defaults** N/A

**Command** User EXEC mode  
**Mode**

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

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

**Examples** 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 *level* ]

### 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

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

### Examples

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

### Related Commands

Command	Description
<b>enable secret</b>	Sets the security password

<b>Platform</b>	N/A
<b>Description</b>	
<b>enable secret</b>	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**.

**Examples** Ruijie(config)# **enable secret 0 pw10**

Related Commands	Command	Description
	<b>enable password</b>	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 | snmp-agent }**

### Parameter Description

Parameter	Description
<b>ssh-server</b>	Enables SSH Server. IPv4 and IPv6 services are enabled at the same time.
<b>telnet-server</b>	Enables Telnet Server. IPv4 and IPv6 services are enabled at the same time.
<b>snmp-agent</b>	Enables SNMP Agent. IPv4 and IPv6 services are enabled at the same time.

### Defaults

telnet-server and snmp-agent are enabled and ssh-server is disabled by default.

### 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.

### Configuration

The following example enables the SSH Server.

### Examples

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

### Related Commands

Command	Description
<b>show service</b>	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** The following example returns to privileged EXEC mode.

**Examples**

```
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** The following example disables display of the EXEC message on line VTY 1.

**Examples**

```
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
<i>minutes</i>	Timeout in minutes.
<b>seconds</b>	(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** The following example sets the connection timeout to 5'30".

**Examples**

```
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**  
**Description**

Parameter	Description
N/A	N/A

**Defaults** N/A

**Command**  
**Mode**

All configuration modes

**Usage Guide** N/A

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

**Examples**

```
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** The following example displays brief information about the help system.

**Examples**

```
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
<i>name</i>	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**

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

**Examples**

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

**Related**  
**Commands**

Command	Description
N/A	N/A

**Platform**  
**Description**

N/A

## 2.21 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
<i>interface-name</i>	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 connection. 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

## 2.22 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** The following example locks a terminal interface.

**Examples**

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

**Related  
Commands**

Command	Description
<b>lockable</b>	Supports terminal locking in the line.

**Platform  
Description** N/A

## 2.23 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** The following example enables terminal locking at the console port and locks the console.

**Examples**

```
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
<b>lock</b>	Locks the terminal.

**Platform  
Description**

N/A

## 2.24 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**

Login is disabled for console and enabled for VTY terminal.

**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**

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

**Examples**

```
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
<b>password</b>	Configures the line login password

**Platform**  
**Description**

N/A

## 2.25 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
<b>default</b>	Name of the default authentication method list
<i>list-name</i>	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
<b>aaa new-model</b>	Enables the AAA security service.
<b>aaa authentication login</b>	Configures the login authentication method list.

**Platform**  
**Description**

N/A

## 2.26 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** The following example sets local user authentication on VTY.

**Examples**

```
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
<b>username</b>	Configures local user information.

**Platform  
Description** N/A

## 2.27 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  
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 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** The following example disables display of the MOTD message on VTY 1.

**Examples**

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

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

## 2.28 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
<i>password</i>	Password for remote line login
<b>0 7</b>	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.
<i>encrypted-password</i>	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** The following example configures the line login password as "red".

**Examples**

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

**Related  
Commands**

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

**Platform  
Description** N/A

## 2.29 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
<b>string</b>	Character string of the <b>prompt</b> 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** The following example sets the prompt string to RGOS.

**Examples**

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

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description** N/A

## 2.30 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
<b>0</b>	(Optional) sets the plaintext password text and encrypts it with irreversible MD5 after configuration.
<i>password</i>	Sets the password plaintext, a string ranging from 1 to 25 characters.
<b>5</b> <i>encrypted-secret</i>	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 1<sup>st</sup>, 3<sup>rd</sup> and 8<sup>th</sup> 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

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

### Examples

```
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
---------	-------------

<b>login</b>	Sets simple password authentication on the interface as the login authentication mode
--------------	---

**Platform** N/A

**Description**

## 2.31 session

Use this command to connect to the management module or the service module through session in VSU master-slave environment (card-type device).

**session** { **master** | [ **device** *device-number* ] **slot** { **m1** | **m2** | *slot-number* } }

Use this command to connect to another device in VSU multiple-device environment (box-type device).

**session** { **master** | **device** *device-number* }

**Parameter  
Description**

Parameter	Description
<b>master</b>	Configures the slave host to connect with the master host or the slave management module with the master management module.
<b>device</b> <i>device-number</i>	Sets the device number.
<b>slot</b> { <b>m1</b>   <b>m2</b> }	Sets the management module to either m1 or m2.
<b>slot</b> <i>slot-number</i>	Sets the device slot ID for service module connection.

**Defaults** N/A

**Command  
Mode** User EXEC mode

**Usage Guide** N/A

**Configuration Examples** The following example configures the slave host to connect with the master host in VSU environment.

```
Ruijie# session master
```

The following example connects to management module m1 of device1 through session in VSU master-slave environment (card-type device).

```
Ruijie# session device 1 slot m1
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description** N/A



## 2.32 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
	<i>minutes</i>	Timeout in minutes.
	<b>output</b>	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

## 2.33 show debugging

Use this command to display debugging state.

**show debugging**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command** Privileged EXEC mode  
**Mode**

**Usage Guide** N/A

**Configuration** The following example displays debugging state.

**Examples** Ruijie#show debugging

```
debug fw-group detect intf-state
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description** N/A

## 2.34 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
<b>console</b>	Display s the configuration of a console line.
<b>vtty</b>	Display s the configuration of a vty line.
<i>line-num</i>	Number of the line.

**Defaults** N/A

**Command** Privileged EXEC mode  
**Mode**

**Usage Guide** This command displays the configuration of a line.

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

**Examples**

```
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

## 2.35 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**

The following example displays the restart settings of the system.

**Examples**

```
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

## 2.36 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	

## 2.37 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** The following example displays whether the service is enabled or disabled.

**Examples**

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

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

## 2.38 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** The following example displays the Telnet Client session information.

**Examples**

```
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

## 2.39 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** N/A

**Examples**

Related Commands	Command	Description
	<b>boot config</b>	Sets the name of the boot configuration file.

**Platform Description** N/A

## 2.40 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 cannot be displayed. If the **show this** command is run, the outcome is NULL.

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.

**Configuration Examples** Use this command to display effective 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)#
```

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

## 2.41 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
-----------	-------------

<i>speed</i>	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** The following example sets the rate of the serial port to 57600 bps.

**Examples**

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

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 2.42 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* ]

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

**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
```

**Related Commands**

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

**Platform Description** N/A

## 2.43 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* ]

**no username** *name*

**Parameter Description**


Parameter	Description
<i>name</i>	Username
<b>login mode</b>	Sets the login mode.
<b>aux</b>	Sets the login mode to aux.
<b>console</b>	Sets the login mode to console.
<b>ssh</b>	Sets the login mode to ssh.
<b>telnet</b>	Sets the login mode to telnet.
<b>online amount</b> <i>number</i>	Sets the amount of users online simultaneously.

<b>permission</b> <i>oper-mode path</i>	Sets the permission on the specified file. <i>op-mode</i> refers to the operation mode and <i>path</i> to the file or the directory path.
<b>privilege</b> <i>privilege-level</i>	Sets the privilege level, in the range from 0 to 15.
<b>reject remote-login</b>	Confines the account to remote login.
<b>nopassword</b>	The account is not configured with a password.
<b>password</b> [ 0   7 ] <i>text-string</i>	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 encryption 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 the username and password exclusive to web authentication.

```
Ruijie(config)# username user1 web-auth password 0 pw
```

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 config.text file.

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

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

**Related Commands**

Command	Description
<b>login local</b>	Enables local authentication

**Platform Description** N/A

## 2.44 username export

Use this command to export user information to the file.

**username export** *filename*

<b>Parameter Description</b>	Parameter	Description
	<i>filename</i>	The file name.
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Privileged EXEC mode	
<b>Usage Guide</b>	This command is used to export user information to the file.	
<b>Configuration Examples</b>	The following example exports user information to the file. <pre>Ruijie# username export user.csv</pre>	
<b>Related Commands</b>	Command	Description
	N/A	N/A
<b>Platform Description</b>	N/A	

## 2.45 username import

Use this command to import user information from the file.

**username import** *filename*

<b>Parameter Description</b>	Parameter	Description
	<i>filename</i>	The file name.
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Privileged EXEC mode	
<b>Usage Guide</b>	This command is used to import user information from the file.	
<b>Configuration Examples</b>	The following example imports user information from the file. <pre>Ruijie# username import user.csv</pre>	

**Related  
Commands****Command**

N/A

**Description**

N/A

**Platform  
Description**

N/A

## 2.46 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, and the device has not been loaded when you run the **write [ memory ]** command.

**Configuration**

The following example saves **running-config** at a specified location.

**Examples**

```
Ruijie# write
Building configuration...
[OK]
```

**Related  
Commands****Command**

N/A

**Description**

N/A

---

<b>Platform</b>	N/A
<b>Description</b>	

## 3 LINE Commands

### 3.1 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
<i>access-list-number</i>	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.
<i>access-list-name</i>	Specifies the ACL name.
<b>in</b>	Filters the incoming connections.
<b>out</b>	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-list 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-list test out
```

#### Related Commands

Command	Description
<b>show running</b>	Displays status information

**Platform Description** N/A

## 3.2 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
<i>level</i>	Command level ranging from 0 to 15. The command of this level is accounted when it is executed.
<b>default</b>	Default authorization list name.
<i>list-name</i>	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

## 3.3 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 exec** { **default** | *list-name* }

**no accounting exec**

Parameter Description	Parameter	Description
	<b>default</b>	Default authorization list name.
	<i>list-name</i>	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	<p>The following example enables user access accounting in line VTY 1.</p> <pre>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</pre>	
Related Commands	Command	Description
	N/A	N/A
Platform Description	N/A	

## 3.4 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
	<i>level</i>	Command level ranging from 0 to 15. The command of this level is executed after authorization is performed.
	<b>default</b>	Default authorization list name,
	<i>list-name</i>	Optional list name.

**Defaults** This function is disabled by default.



**Command** Line configuration mode  
**Mode**

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

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

**Examples**

```
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** N/A  
**Description**

## 3.5 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 { default | list-name }**  
**no authorization exec**

**Parameter  
Description**

Parameter	Description
<b>default</b>	Default authorization list name,
<i>list-name</i>	Optional list name.

**Defaults** This function is disabled by default,

**Command** Line configuration mode  
**Mode**

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

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

**Examples**

```
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

## 3.6 clear line

Use this command to clear connection status of the line.

**clear line** { **console** *line-num* | **vtty** *line-num* | *line-num* }

**Parameter  
Description**

Parameter	Description
<b>console</b>	Clears connection status of the console line.
<b>vtty</b>	Clears connection status of the virtual terminal line.
<i>line-num</i>	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

### 3.7 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
	<i>ascii-value</i>	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

### 3.8 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

## 3.9 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** N/A  
**Description**

## 3.10 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
<b>size size</b>	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** N/A  
**Description**

### 3.11 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
	<i>access-list-name</i>	Specifies the ACL name.
	<b>in</b>	Filters the incoming connections.
	<b>out</b>	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-list test out
```

Related Commands	Command	Description
	<b>show running</b>	Displays status information

**Platform** N/A  
**Description**

## 3.12 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
<i>screen-length</i>	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

N/A

### Description

## 3.13 line

Use this command to enter the specified LINE mode.

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

### Parameter Description

Parameter	Description
<b>console</b>	Console port
<b>vty</b>	Virtual terminal line, applicable for telnet/ssh connection.
<i>first-line</i>	Number of first-line to enter
<i>last-line</i>	Number of last-line to enter

### Defaults

N/A

**Command** Global configuration mode  
**Mode**

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

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

**Examples** Ruijie(config)# line vty 1 3

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A  
**Description**

### 3.14 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
<i>line-number</i>	The number of VTY connections, in the range from 0 to 35.

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

**Command** Global configuration mode.  
**Mode**

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

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

**Examples**

```
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** N/A**Description**

### 3.15 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** The following example describes the line location as Switch's Line VTY 0.**Examples**

Ruijie(config)# line vty 0

Ruijie(config-line)# location Switch's Line Vty 0

**Related  
Commands****Command****Description**

N/A

N/A

**Platform** N/A**Description**

### 3.16 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**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	N/A	N/A
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Line configuration mode	
<b>Usage Guide</b>	N/A	
<b>Configuration Examples</b>	The following example enables log display on the terminal in VTY line 0 5. <pre>Ruijie(config)# line vty 0 5 Ruijie(config-line)# monitor</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	N/A	N/A
<b>Platform Description</b>	N/A	

### 3.17 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**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<i>level</i>	Privilege level, in the range from 0 to 15.
<b>Defaults</b>	The default is 1.	
<b>Command Mode</b>	Line configuration mode	
<b>Usage Guide</b>	N/A	
<b>Configuration Examples</b>	The following example sets the privilege level for the line VTY 0 4 to 14. <pre>Ruijie(config)# line vty 0 4 Ruijie(config-line) privilege level 14</pre>	

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A  
**Description**

## 3.18 refuse-message

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

**refuse-message** [ *c message c* ]

**no refuse-message**

**Parameter  
Description**

Parameter	Description
<i>c</i>	Delimiter of the login refusal message, which is not allowed within the message.
<i>message</i>	Login refusal message.

**Defaults** N/A

**Command  
Mode** Line configuration mode

**Usage Guide** This command is used to set the login refusal message for the line. The characters entered after the ending delimiter are discarded directly, The login refusal message is displayed when the user has been refused to login.

**Configuration  
Examples** The following example sets the login refusal message for the line to “Unauthorized user cannot login to the ruijie device”.

```
Ruijie(config-line)#vacant-message @ Unauthorized user cannot login to the  
ruijie device @
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A  
**Description**

### 3.19 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** The following example displays the command history of the line.

**Examples**

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

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

### 3.20 show line

Use this command to display line configuration.

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

Parameter Description	Parameter	Description
	<b>console</b>	Displays configuration for the console line.
	<b>vtty</b>	Displays configuration for the virtual terminal line.
	<i>line-num</i>	Displays the line.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

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

**Examples**

```
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, 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**

N/A

**Description**

N/A

**Platform**

N/A

**Description**

## 3.21 show privilege

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

**show privilege****Parameter  
Description****Parameter**

N/A

**Description**

N/A

**Defaults**

N/A

**Command  
Mode**

Privileged EXEC mode

**Usage Guide**

N/A

**Configuration**

The following example displays the privilege level of the line.

**Examples**

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

**Related  
Commands****Command**

N/A

**Description**

N/A

**Platform**

N/A

**Description**

## 3.22 show users

Use this command to display the login user information.

**show users [ all ]****Parameter  
Description****Parameter****Description**

<b>all</b>	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** N/A

**Description**

## 3.23 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**

<b>Parameter Description</b>	Parameter	Description
	<i>baudrate</i>	Sets the baud rate, in the range from 9600 to 115200.
<b>Defaults</b>	The default is 9600.	
<b>Command Mode</b>	LINE configuration mode	
<b>Usage Guide</b>	N/A	
<b>Configuration Examples</b>	The following example sets the baud rate to 115200, <pre>Ruijie(config-line)# speed 115200</pre>	
<b>Related Commands</b>	Command	Description
	N/A	N/A
<b>Platform Description</b>	N/A	

## 3.24 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**

<b>Parameter Description</b>	Parameter	Description
	<i>escape-value</i>	Sets the ASCII value corresponding to the escape character for the current terminal, in the range from 0 to 255.
<b>Defaults</b>	The default escape character is <b>Ctrl+^</b> ( <b>Ctrl+Shift+6</b> ) and the ASCII decimal value is 30.	
<b>Command Mode</b>	Privileged EXEC mode	
<b>Usage Guide</b>	After configuring this command, press the key combination of the escape character and then press <b>x</b> , the current session is disconnected to return to the original session.	



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

**Examples** Ruijie# terminal escape-character 23

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A  
**Description**

## 3.25 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
<b>size</b> <i>size</i>	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** N/A  
**Description**

## 3.26 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
	<i>screen-length</i>	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

## 3.27 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
	<i>location</i>	Configures location description of the current device.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example configures location description of the current device as "Switch's Line Vty 0".

**Examples** Ruijie# terminal location Switch's Line Vty 0

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

## 3.28 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
<i>baudrate</i>	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** The following example sets the baud rate for the current terminal to 115200,

**Examples** Ruijie# terminal speed 115200

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

## 3.29 terminal width

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

**terminal width** *screen-width*

**terminal no width**

### Parameter Description

Parameter	Description
<i>screen-width</i>	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

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

### Examples

```
Ruijie# terminal width 10
```

### Related Commands

Command	Description
N/A	N/A

### Platform

N/A

### Description

## 3.30 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
<b>response</b>	The time period during which the line waits for the user to enter any message.
<i>seconds</i>	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** The following example sets the login authentication timeout to 300 seconds for line VTY 0 5.

**Examples**

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

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

### 3.31 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
<b>all</b>	Allows all the protocols under Line to be used for communication
<b>ssh</b>	Allows only the SSH protocol under Line to be used for communication
<b>telnet</b>	Allows only the Telnet protocol under Line to be used for communication
<b>none</b>	Allows none of protocols under Line to be used for communication

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

**Command** Line configuration mode

**Mode**

**Usage Guide** N/A

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

**Examples**

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

**Related  
Commands****Command****show running****Description**

Displays status information

**Platform**

N/A

**Description**

## 3.32 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**

The following example sets the logout message to "Logout from the ruijie device".

**Examples**

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

**Related  
Commands****Command**

N/A

**Description**

N/A

**Platform**

N/A

**Description**

## 3.33 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
<i>screen-width</i>	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**

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

**Examples**

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

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

## 4 File System Commands

### 4.1 cd

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

**cd** [ *filesystem:* ] [ *directory* ]

Parameter	Parameter	Description
Description	<i>filesystem:</i>	The URL of filesystem, followed by a colon (:). The filesystem includes <b>flash:</b> , <b>usb:</b> , and <b>tmp:</b> .
	<i>directory</i>	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** Privileged EXEC mode.

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

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

#### Configuration

#### Examples

Related	Command	Description
Commands	<b>pwd</b>	Displays the present word directory.

**Platform** N/A.

#### Description

### 4.2 copy

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

**copy** *source-url destination-url*

Parameter	Parameter	Description
Description	<i>source-url</i>	Source file URL, which can be local or remote.
	<i>destination-url</i>	Destination file URL, which can be local or remote.



**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
<b>running-config</b>	Running configuration file.
<b>startup-config</b>	startup configuration file.
<b>flash:</b>	local FLASH file system.
<b>tftp:</b>	The URL of TFTP network server, in the format as follows: <b>tftp:[[/location]/directory]/filename</b>
<b>oob_tftp:</b>	The URL of TFTP network 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 netconfig file exists locally.

```
Ruijie#copy tftp://192.168.64.2/netconfig flash:/netconfig
Do you want to overwrite [/data/netconfig]? [Y/N]:y
Press Ctrl+C to quit
!
Copy success.
```

**Related Commands**

Command	Description
<b>delete</b>	Deletes the file.
<b>rename</b>	Renames the file.
<b>dir</b>	Displays the file list of the specified directory.

**Platform Description** N/A

## 4.3 delete

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

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

Parameter	Description
-----------	-------------

<b>Parameter Description</b>	<i>filesystem:</i>	The URL of file system, followed by a colon (:). The file system includes <b>flash:</b> , <b>usb:</b> , and <b>tmp:</b> .
	<i>file-url</i>	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)
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>copy</b>	Copies the file.
	<b>dir</b>	Displays the file list of the specified directory.

**Platform Description** N/A

## 4.4 dir

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

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

Parameter	Parameter	Description
Description	<i>filesystem</i>	The URL of file system, followed by a colon (:). The file system includes <b>flash:</b> , <b>usb:</b> and <b>tmp:</b> .
	<i>directory</i>	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: <ul style="list-style-type: none"> <li>● d: directory</li> <li>● r: read</li> <li>● w: write</li> <li>● x: executable</li> </ul>
10485760	File size
rpmdb	File name
files	File number
directories	Directory number
total	Total size
free	Available space

Command	Description
---------	-------------

<b>Related</b>	<b>pwd</b>	Displays the present directory.
<b>Commands</b>	<b>cd</b>	Sets the present directory of the file system.

**Platform** N/A.  
**Description**

## 4.5 erase

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

**erase** *filesystem*

Parameter	Parameter	Description
<b>Description</b>	<i>filesystem:</i>	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** The following example erases the USB filesystem.

### Examples

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

Related	Command	Description
<b>Commands</b>	N/A	N/A

**Platform** N/A  
**Description**

## 4.6 file

Use this command to display the information about a file.

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

Parameter	Parameter	Description
<b>Description</b>	<i>filesystem:</i>	The URL of file system, followed by a colon (:). The file system includes <b>flash:</b> , <b>usb:</b> and <b>tmp:</b> .

*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** The following example displays the information about gcc executable file.

**Examples**

```
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

## 4.7 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** The following example sets the prompt mode to noisy.

**Examples**

```
Ruijie#file prompt noisy
```

**Related Commands**

**Command****Description**

N/A

N/A

**Platform** N/A  
**Description**

## 4.8 mkdir

Use this command to create a directory.


**mkdir** [ *filesystem:* ] *directory*

Parameter	Parameter	Description
<b>Description</b>	<i>filesystem:</i>	The URL of file system, followed by a colon (:). The file system includes <b>flash:</b> , <b>usb:</b> and <b>tmp:</b> .
	<i>directory</i>	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
<b>rmdir</b>	Deletes the directory.
<b>pwd</b>	Displays the present directory.

#### Platform

N/A

#### Description

## 4.9 more

Use this command to display the content of a file.

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

#### Parameter Description

Parameter	Description
<b>/ascii</b>	Displays the file content in the ASCII format.
<b>/binary</b>	Displays the file content in the
<i>filesystem:</i>	The URL of file system, followed by a colon (:). The file system includes <b>flash:</b> , <b>usb:</b> and <b>tmp:</b> .
<i>file-url</i>	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

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

#### Examples

```

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

## 4.10 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**

**Related  
Commands**

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

**Platform  
Description**

N/A.

## 4.11 rename

Use this command to move or rename the specified file.

**rename** *src-url dst-url*



Parameter	Parameter	Description
Description	<i>src-url</i>	The source file URL to move.
	<i>dst-url</i>	The URL of the destination file or directory.
Defaults	N/A.	
Command Mode	Privileged EXEC mode.	
Usage Guide	N/A	
Configuration	The following example renames the fstab file in the root directory on the FLASH disk as new-fstab.	
Examples	<pre> 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) </pre>	
Related Commands	Command	Description
	<b>delete</b>	Deletes the file.
	<b>copy</b>	Copies the file.
Platform Description	N/A	

## 4.12 rmdir

Use this command to delete an empty directory.

**rmdir** [ *filesystem:* ] *directory*

Parameter	Description
-----------	-------------

<b>Parameter Description</b>	<i>filesystem:</i>	The URL of file system, followed by a colon (:). The file system includes <b>flash:</b> , <b>usb:</b> and <b>tmp:</b> .
	<i>directory</i>	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** The following example deletes the null test directories.

**Examples**

```
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)
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	N/A.	N/A.

**Platform Description** N/A.

## 4.13 show file systems

Use this command to display the file system information.

**show file systems**

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

**Defaults** N/A.

**Command Mode** Privileged EXEC 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** The following example displays the file system information:

**Examples**

```
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: <ul style="list-style-type: none"> <li>● ro: read-only</li> <li>● wo: write-only</li> <li>● rw: read and write</li> </ul>
Prefixes	File system prefix

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

**Platform Description** N/A.

## 4.14 show mount

Use this command to display the mounted information.

**show mount**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** N/A

**Command Mode** N/A

**Usage Guide** N/A

**Configuration** The following example displays the mounted information.

**Examples**

```
Ruijie#show mount
/dev/sdal 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	Command	Description
Commands	N/A	N/A

**Platform Description** N/A

## 4.15 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	Parameter	Description
Description	<i>ip-address</i>	Specifies the IPv4 source address.
	<i>ipv6-address</i>	Specifies the IPv6 source address.
	<i>interface</i>	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	Command	Description
Commands	N/A	N/A

**Platform Description** N/A

## 4.16 tree

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

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

Parameter	Parameter	Description
Description	<i>filesystem:</i>	The URL of file system, followed by a colon (:). The file system includes <b>flash:</b> , <b>usb:</b> and <b>tmp:</b> .
	<i>directory</i>	The path name. A file name starts with "/" is an absolute path. Otherwise, it is a relative path.
Defaults	The default <i>filesystem:</i> is <b>flash:</b> .	
Command Mode	Privileged EXEC mode	
Usage Guide	N/A	
Configuration	The following example displays the file tree of flash:/echo	
Examples	<pre> 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 </pre>	

```

|   +-- 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

## 4.17 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 <b>flash:</b> , <b>usb:</b> and <b>tmp:</b> .
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**

The following example computes MD5 of flash:/gcc.

**Examples**

```

Ruijie#verify flash:/gcc
8b072de7db7affd8b2ef824e7e4d716c

```

The following example

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 4.18 show disk

Use this command to display USB/Flash information.

**show disk [ usb | flash ]**

Parameter Description	Parameter	Description
	<b>usb</b>	Displays USB information.
	<b>flash</b>	Displays FLASH information.

**Defaults** N/A

**Command Mode** Privileged EXEC 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** N/A  
**Description**



## 5 SYS Commands

### 5.1 calendar set

Use this command to set the hardware calendar.

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

#### Parameter Description

Parameter	Description
<i>hour</i> [ <i>:minute</i> [ <i>:second</i> ] ]	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.
<i>month</i>	Sets month. The range is from 1 to 12.
<i>day</i>	Sets date. The range is from 1 to 31.
<i>year</i>	Sets year. The range is from 1970 to 2069.

#### Defaults

-

#### Command Mode


Privileged EXEC mode

#### Default Level

-

#### Usage Guide

- 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

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
```


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
```

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**

## 5.2 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 Examples** The following example enables the system to synchronize the software time with the hardware time.

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

**Check Method** -

**Platform** -  
**Description**

## 5.3 clock set

Use this command to set the system software clock.

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


Parameter Description	Parameter	Description
	<i>hour</i> [ <i>:minute</i> [ <i>:second</i> ] ]	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.
	<i>month</i>	Sets month. The range is from 1 to 12.
	<i>day</i>	Sets date. The range is from 1 to 31.
	<i>year</i>	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** 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
```

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
```

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**

## 5.4 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
	<b>zone</b>	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.
	<b>start</b>	Indicates the start time of the summer time.
	<i>start-month</i>	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.
	<i>week</i>	Start week in the start month. The range is from 1 to 5.
	<b>last</b>	The last week of the specified month.
	<i>start-date</i>	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.
	<b>hh:mm</b>	Time, in the format of hour : minute.
	<b>end</b>	Indicates the end time of the summer time.
	<i>end-month</i>	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.
	<b>ahead</b>	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.
	<i>hours-offset</i>	Hours ahead of the standard time. The range is from 0 to 12. You are not allowed to set it to 00:00.
	<i>minutes-offset</i>	Minutes ahead of the standard time. The range is from 0 to 59. If <i>hours-offset</i> has been set to 0, you are not allowed to set <i>minutes-offset</i> to 0.

**Defaults** -

**Command Mode** Global configuration mode

**Default Level** 15

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

**Configuration Examples** 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

```

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

```

The following example disables 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** -


## 5.5 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
	<i>name</i>	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.
	<i>hours-offset</i>	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. <div> If the time is slower than the UTC time, add "-" before <i>hours-offset</i>.</div>
	<i>minutes-offset</i>	Minutes of time difference. The range is from 0 to 59.

**Defaults** -

**Command Mode** Global configuration mode

**Default Level** 15

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

**Configuration Examples** 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
```

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)
```

The following example removes the time zone settings.

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

**Check Method** -

**Platform** -  
**Description**

## 5.6 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** 1

**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** 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.
```

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
```



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** -

## 5.7 cpu high-watermark set

Use this command to set the high watermark of the CPU usage of the control core and enable CPU usage monitoring.

**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
	<b>up</b> <i>up-value</i>	Sets the high watermark of the CPU usage. The range is from 1 to 99.
	<b>down</b> <i>down-value</i>	Sets the low watermark of the CPU usage. The range is from 1 to 99.
<b>Defaults</b>	By default, the high watermark and low watermark are 85% and 75% respectively.	
<b>Command Mode</b>	Global configuration mode	
<b>Default Level</b>	15	
<b>Usage Guide</b>	<p>This command is supported only in VSD0 mode. Multiple VSDs are not supported.</p> <p>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.</p>	
<b>Configuration Examples</b>	<p>The following example sets the CPU usage watermark to the default value and enables CPU usage monitoring (if it is disabled).</p> <pre>Ruijie(config)# default cpu high-watermark set Reset default cpu watermark monitor Set system cpu high-watermark up 85%, down 75%</pre> <p>The following example disables CPU usage monitoring.</p> <pre>Ruijie(config)# no cpu high-watermark set Close cpu watermark monitor</pre> <p>The following example enables CPU usage monitoring. Keep the defined watermark value.</p> <pre>Ruijie(config)# cpu high-watermark set Open cpu watermark monitor Set system cpu high-watermark up 85%, down 75%</pre>	
<b>Check Method</b>	-	
<b>Prompt Message</b>	<p>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:</p> <pre>*Jan 19 16:23:01: %RG_SYSMON-4-CPU_WATERMARK_HIGH: warning! system cpu usage above high watermark(85%),current cpu usage 100%</pre> <p>When the CPU usage is less than the lower limit of the high watermark, the system will print the following message about warning release:</p> <pre>*Jan 20 07:02:52: %RG_SYSMON-5- CPU_WATERMARK:withdraw warning! system cpu usage below high watermark(85%), current cpu usage 36%</pre>	

**Platform**  
**Description**

-

## 5.8 memory history clear

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

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

**Parameter**  
**Description**

Parameter	Description
<b>one-fourth</b>	Clears one fourth entries.
<b>half</b>	Clears a half of entries.
<b>all</b>	Clears all the entries.

**Defaults**

-

**Command**  
**Mode**

Global configuration mode

**Default Level**

-

**Usage Guide**

-

**Configuration**      The following example clears a half of the history of the memory usage.

**Examples**

```
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**

## 5.9 memory low-watermark set

Use this command to set the low watermark threshold of the memory and enable the memory low watermark detection.

**memory low-watermark set** *mem-set*

Use this command to disable the detection of memory low watermark.

**no memory low-watermark set**

Parameter Description	Parameter	Description
	<i>mem-rate</i>	Memory watermark threshold. The range is from 1KB to 4294967295KB.

**Defaults** No watermark threshold is set by default.

**Command Mode** Global configuration mode

**Default Level** -

**Usage Guide** You can use this command to enable the detection of the memory low watermark and set the memory watermark threshold. When the system memory is less than this threshold, the system will print prompts.

<b>Configuration</b>	The following example sets the low watermark threshold of the memory to 500000KB.
<b>Examples</b>	<pre>Ruijie(config)#memory low-watermark 500000</pre>
<b>Check Method</b>	-
<b>Prompt Message</b>	When the system memory is less than the defined watermark value (such as 500000KB), the system prints the following message: <pre>Ruijie(config)#&lt;187&gt; Jan 1 00:18:59 syslog: Free Memory has dropped below 500000k</pre>
<b>Platform Description</b>	-

## 5.10 reload

Use this command to reload the device.

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

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

**Defaults** -

**Command Mode** Privileged EXEC mode

**Default Level** 15

**Usage Guide** -

**Configuration** The following example reloads the device.

**Examples**

```
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**

-

## 5.11 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**

1

**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**

-

## 5.12 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** 1

**Usage Guide** -

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

**Examples**

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

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** -

## 5.13 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
<b>sorted total</b>	Ranked according to the memory usage.
<b>history</b>	Displays the history of memory usage.
<b>low-watermark</b>	Displays the memory low watermark threshold of the system.
<i>process-id</i>	Displays the memory usage of the task specified by <i>process-id</i> .
<i>process-name</i>	Displays the memory usage of the task specified by <i>process-name</i> .

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

**Default Level** 15

**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** 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, 160124K used, 348200K 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



<b>Prompt</b>	-
<b>Message</b>	
<b>Platform</b>	-
<b>Description</b>	

## 5.14 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** The following example displays the information on the device mounted to the PCI bus.

```
Ruijie# show pci-bus
N0:0
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

N0:1
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**

## 5.15 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
<b>5sec</b>   <b>1min</b>   <b>5min</b>   <b>15min</b>	Displays lists of tasks in descending order of CPU usage within the last five seconds, one minute, five minutes, and 15 minutes.
<b>Nonzero</b>	Does not display the task with 0 CPU usage.
<b>History</b>	Displays the CPU usage of the control core within the last 60 seconds, 60 minutes, and 72 hours in histogram.
<b>Table</b>	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**

15

**Usage Guide**

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

**Configuration**  
**Examples**

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--

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.
---------	---

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
```

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
```

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.

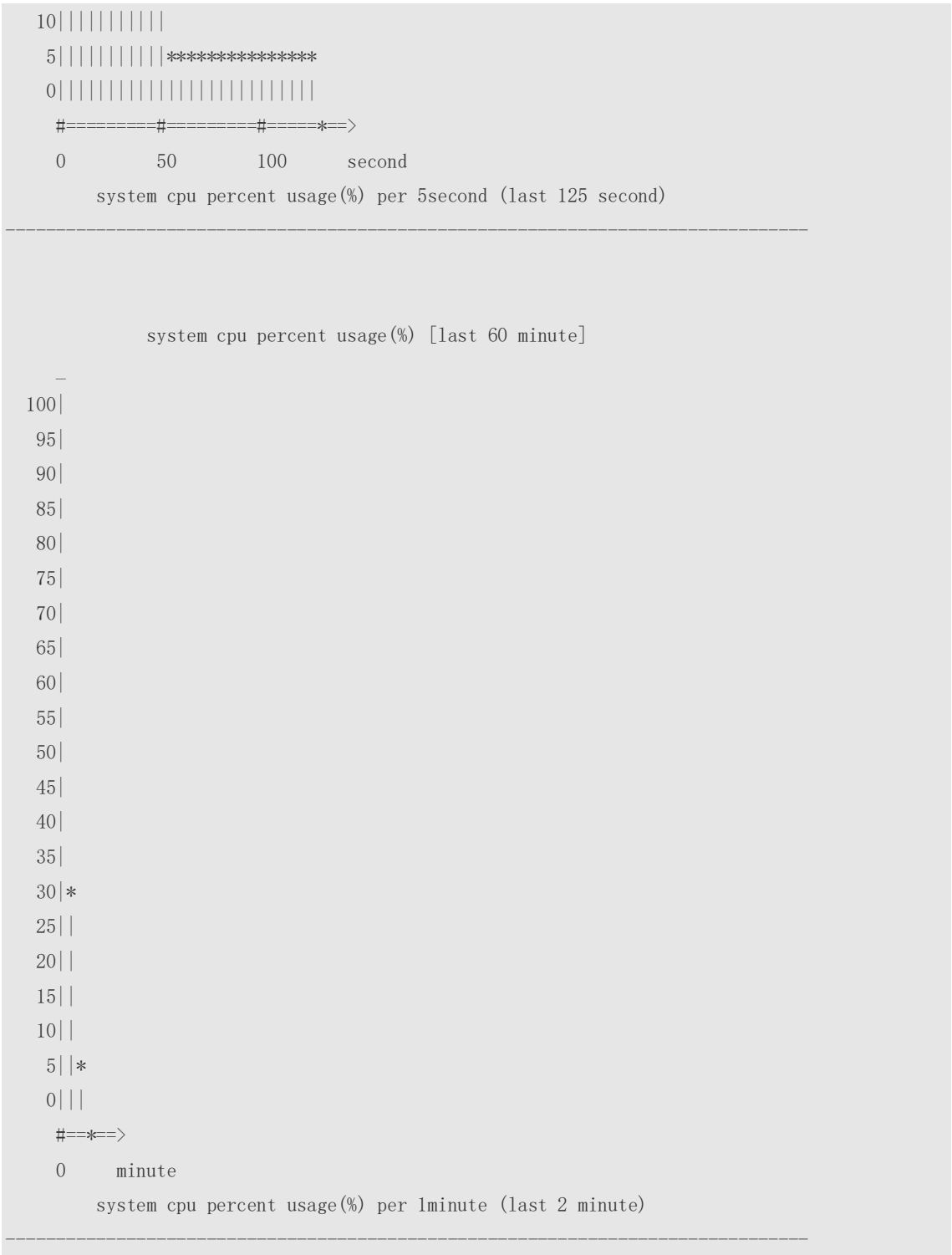
The third histogram displays the CPU usage of the control core within the last 72 hours, measured in %. Every segment on the x-coordinate is 1 hour.

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| |||||
```



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**

5.16 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
	<i>process-id</i>	Displays the information on the task of the specified task ID.
	<i>process-name</i>	Displays the information on the task of the specified task name.

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

**Default Level** 15


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

**Configuration Examples** 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       :
    Last 5 sec   0.3% (0.6%)
    Last 1 min   0.3% (0.6%)
    Last 5 min   0.3% (0.6%)
    Last 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_procs, 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	<p>CPU usage of the task within the last five seconds, one minute, five minutes, and 15 minutes.</p> <p>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%).</p>
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

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**

### 5.17 show usb-bus

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



---

**show usb-bus**

<b>Parameter Description</b>	Parameter	Description
	-	-
<b>Command Mode</b>	Privileged EXEC mode/ global configuration mode	
<b>Default Level</b>	1	
<b>Usage Guide</b>	-	
<b>Configuration Examples</b>	1: The following example displays the information on the device mounted to the USB bus. <pre>Ruijie# show usb-bus Device: Linux Foundation 2.0 root hub Bus 001 Device 001: ID 1d6b:0002</pre>	
<b>Prompt Message</b>	-	
<b>Platform Description</b>	-	

## 5.18 show version

Use this command to display the system version information.

**show version**

<b>Parameter Description</b>	Parameter	Description
	-	-
<b>Command Mode</b>	Privileged EXEC mode/ global configuration mode	
<b>Default Level</b>	1	
<b>Usage Guide</b>	-	
<b>Usage Guide</b>	The following example displays the system version information. <pre>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</pre>	

```

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**

## 5.19 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**
**Parameter  
Description**

Parameter	Description
-	-

**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--			

**Prompt** -  
**Message**

**Platform** -  
**Description**

## 6 Time Range Commands

### 6.1 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
	<b>start</b> <i>time date</i>	Indicates the start time of the range.
	<b>end</b> <i>time date</i>	Indicates the end time of the range.

**Defaults** No absolute time range is configured by default..

**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.

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

**Examples**

```
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** -

## 6.2 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
	<i>day-of-the-week</i>	Indicates the week day when the periodic time starts or ends.
	<i>time</i>	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.

**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** -

## 6.3 show time-range

Use this command to display the time range configuration.

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

Parameter Description	Parameter	Description
	<i>time-range-name</i>	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	The following example displays the time range configuration.	
Examples	<pre>Ruijie# show time-range time-range entry: test (inactive)     absolute end 01:02 02 February 2012</pre>	
Prompt Message	-	
Platform Description	-	

## 6.4 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
	<i>time-range-name</i>	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**     The following example creates a time range.

**Examples**

```
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**     -

## 7 CWMP Commands

### 7.1 acs password

Use this command to configure the ACS password to be authenticated for the CPE to connect to the ACS. Use the **no** form of this command to cancel the configuration.

**acs password** { *password* | *encryption-type encrypted-password* }

**no acs password**

#### Parameter Description

Parameter	Description
<i>password</i>	Configures the ACS user password to be authenticated for the CPE to connect to the ACS.
<i>encryption-type</i>	Specifies the encryption type, which can be set to 0 (indicating that no encryption is used) or 7 (indicating that simple encryption is used).
<i>encrypted-password</i>	Specifies the password in encrypted form.

#### Defaults



encryption-type: 0  
encrypted-password: N/A

#### Command Mode

CWMP configuration mode

#### Usage Guide

Use this command to configure the ACS user password to be authenticated for the CPE to connect to the ACS. In general, the encryption type does not need to be specified. The encryption type needs to be specified only when copying and pasting the encrypted password of this command. A valid password should meet the following format requirements:

-  The command contains English letters in upper or lower case and numeric characters.
-  Blanks are allowed at the beginning of the password but will be ignored. Intermediate and ending blanks, however, are regarded as a part of the password.

#### Configuration Examples

The following example configures the ACS password to be authenticated for the CPE to connect to the ACS to 123.

```
Ruijie#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#cwmp
Ruijie(config-cwmp)#acs password 123
Ruijie(config-cwmp)#
```



**Related  
Commands**

Command	Description
<b>show cwmp configuration</b>	Displays the current configuration of CWMP.
<b>show cwmp status</b>	Displays the running status of CWMP.
<b>acs username</b>	Configures the ACS username to be authenticated for the CPE to connect to the ACS.

**Platform** N/A**Description**

## 7.2 acs url

Use this command to configure the URL of the ACS to which the CPE will connect.

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

**acs url** *url*

**no acs url**

**Parameter  
Description**

Parameter	Description
<i>url</i>	Specifies the URL of the ACS.

**Defaults** N/A**Command  
Mode** CWMP configuration mode

**Usage Guide** Use this command to configure the URL of the ACS to which the CPE will connect. If no ACS URL is manually specified but a dynamic ACS URL is obtained through DHCP, the CPE initiates a connection to the ACS using the dynamically obtained ACS URL. The URL of the ACS should meet the following format requirements:

- The URL of the ACS is formatted as `http://host[:port]/path` or `https://host[:port]/path`.
- The URL of the ACS consists of at most 256 characters.

**Configuration** The following example specifies the URL of the ACS to `http://10.10.10.1:8080/acs`.

**Examples**

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#cwmp
Ruijie(config-cwmp)#acs url http://10.10.10.1:8080/acs
Ruijie(config-cwmp)#
```

The following example specifies the URL of the ACS to `http://www.test.com/service/tr069servlet`.

```
Ruijie#configure terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#cwmp
Ruijie(config-cwmp)#acs url http://www.test.com/service/tr069servlet
Ruijie(config-cwmp)#
```

**Related  
Commands**

Command	Description
<b>show cwmp configuration</b>	Displays the current configuration of CWMP.
<b>show cwmp status</b>	Displays the running status of CWMP.

**Platform** N/A**Description**

## 7.3 acs username

Use this command to configure the ACS username to be authenticated for the CPE to connect to the ACS. Use the **no** form of this command to restore the default setting.

**acs username** *username***no acs username****Parameter  
Description**

Parameter	Description
<i>username</i>	Configures the ACS username to be authenticated for the CPE to connect to the ACS.

**Defaults** N/A**Command  
Mode** CWMP configuration mode**Usage Guide** Configures the ACS username to be authenticated for the CPE to connect to the ACS.**Configuration  
Examples** The following example configures the ACS username to be authenticated for the CPE to connect to the ACS to admin.

```
Ruijie#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#cwmp
Ruijie(config-cwmp)#acs username admin
Ruijie(config-cwmp)#
```

**Related  
Commands**

Command	Description
<b>show cwmp configuration</b>	Displays the current configuration of CWMP.

<b>show cwmp status</b>	Displays the running status of CWMP.
<b>acs password</b>	Configures the ACS password to be authenticated for the CPE to connect to the ACS.

**Platform** N/A

**Description**

## cpe back-up

Use this command to configure the backup and restoration of the main program and configuration file of the CPE.

Use the **no** form of this command to disable this function.

**cpe back-up** [ **delay-time** *seconds* ]

**no cpe back-up**

Parameter Description	Parameter	Description
	<i>seconds</i>	Specifies the delay for backup and restoration of the main program and configuration file of the CPE, in the range from 30 to 10,000 in the unit of seconds

**Defaults** The default is 60 seconds.

**Command Mode** CWMP configuration mode

**Usage Guide** You can configure the restoration function on a CPE, so that the CPE can restore itself from exceptions of its main program or configuration file. Then when the CPE fails to connect to the ACS and breaks away from the NMS after its main program or configuration file is upgraded, the previous main program or configuration file of the CPE can be restored in time for the ACS to manage the CPE. This kind of exception is generally caused by delivery of a wrong main program or configuration file.

**Configuration Examples** The following example disables the backup and restoration of the main program and configuration file of the CPE.

```
Ruijie#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#cwmp
Ruijie(config-cwmp)#no cpe back-up
Ruijie(config-cwmp)#
```

Related Commands	Command	Description

<b>show cwmp configuration</b>	Displays the current configuration of CWMP.
<b>show cwmp status</b>	Displays the running status of CWMP.

**Platform** N/A

**Description**

## 7.4 cpe back-up

Use this command to enable the CPE backup function.

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

**cpe back-up** [**delay-time** *seconds*]

**no cpe back-up**

Parameter Description	Parameter	Description
	<i>seconds</i>	Sets the backup delay time (30-10,000 seconds).

**Defaults** The default is 60 seconds.

**Command Mode** CWMP configuration mode

**Usage Guide** After upgrading main programs or configurations, CPE cannot communicate with ACS for wrong configuration delivery. Use this command to recover the previous programs and configurations.

**Configuration Examples** The following example disables the CPE backup function.

```
Ruijie#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#cwmp
Ruijie(config-cwmp)#no cpe back-up
Ruijie(config-cwmp)#
```

**Platform** N/A

**Description**

## 7.5 cpe inform

Use this command to configure the periodic notification function of the CPE.

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

**cpe inform** [**interval** *seconds*] [**starttime** *time*]

**no cpe inform**


Parameter Description	Parameter	Description
	<i>seconds</i>	Specifies the periodical notification interval of the CPE in the range from 30 to 3,600 in the unit of seconds.
	<i>time</i>	Specifies the date and time for starting periodical notification in yyyy-mm-ddThh:mm:ss format.

**Defaults** The default is 600 seconds.

**Command Mode** CWMP configuration mode

**Usage Guide** Use this command to configure the periodic notification function of the CPE.

- If the time for starting periodical notification is not specified, periodical notification starts after the periodical notification function is enabled. The notification is performed once within every notification interval.
- If the time for starting periodical notification is specified, periodical notification starts at the specified start time. For instance, if the periodical notification interval is set to 60 seconds and the start time is 12:00 am next day, periodical notification will start at 12:00 am next day and once every 60 seconds.

 The narrower periodical notification interval allows the ACS to track the latest CPE status more accurately. However, narrower periodical notification interval brings about more sessions between the CPE and the ACS, consuming more resources of them. So the user should specify the periodical notification interval of the CPE to a reasonable value according to the network performance and the ACS performance.

**Configuration Examples** The following example specifies the periodical notification interval of the CPE to 60 seconds.

**Examples**

```
Ruijie#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#cwmp
Ruijie(config-cwmp)#cpe inform interval 60
Ruijie(config-cwmp)#
```

**Related Commands**

Command	Description
<b>show cwmp configuration</b>	Displays the current configuration of CWMP.
<b>show cwmp status</b>	Displays the running status of CWMP.

**Platform Description** N/A

## 7.6 cpe password

Use this command to configure the CPE password to be authenticated for the ACS to connect to the CPE. Use the **no** form of this command to cancel the configuration.

**cpe password** { *password* | *encryption-type encrypted-password* }

**no cpe password**

### Parameter Description

Parameter	Description
<i>password</i>	Configures the CPE user password to be authenticated for the ACS to connect to the CPE.
<i>encryption-type</i>	Specifies the encryption type, which can be set to 0 (indicating that no encryption is used) or 7 (indicating that simple encryption is used).
<i>encrypted-password</i>	Specifies the password in encrypted form.

### Defaults

encryption-type: 0



encrypted-password: N/A

### Command Mode

CWMP configuration mode

### Usage Guide

Use this command to configure the CPE user password to be authenticated for the ACS to connect to the CPE. In general, the encryption type does not need to be specified. The encryption type needs to be specified only when copying and pasting the encrypted password of this command. A valid password should meet the following format requirements:

-  The command contains English letters in upper or lower case and numeric characters.
-  Blanks are allowed at the beginning of the password but will be ignored. Intermediate and ending blanks, however, are regarded as a part of the password.

### Configuration Examples

The following example configures the CPE password to be authenticated for the ACS to connect to the CPE to 123.

```
Ruijie#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#cwmp
Ruijie(config-cwmp)#cpe password 123
Ruijie(config-cwmp)#
```

### Related Commands

Command	Description
<b>show cwmp configuration</b>	Displays the current configuration of CWMP.
<b>show cwmp status</b>	Displays the running status of CWMP.

**acs username**

Configures the CPE username to be authenticated for the ACS to connect to the CPE.

**Platform** N/A

**Description**

## 7.7 cpe url

Use this command to configure the URL of the CPE to which the ACS will connect.

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

**cpe url** *url*

**no cpe url**

**Parameter  
Description**

**Parameter**

**Description**

*url*

Specifies the URL of the CPE.

**Defaults** N/A

**Command  
Mode** CWMP configuration mode

**Usage Guide** Use this command to configure the URL of the CPE to which the ACS will connect. If no CPE URL is manually specified but a dynamic CPE URL is obtained through DHCP, the ACS initiates a connection to the CPE using the dynamically obtained CPE URL. The URL of the CPE should meet the following format requirements:

- The URL of the CPE is formatted as http://ip [: port ]/ path.
- The URL of the CPE consists of at most 256 characters.

**Configuration** The following example specifies the URL of the CPE to http://10.10.10.1:7547/acs.

**Examples**

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#cwmp
Ruijie(config-cwmp)#cpe url Hhttp://10.10.10.1:7547/
Ruijie(config-cwmp)#
```

**Related  
Commands**

**Command**

**Description**

**show cwmp configuration**

Displays the current configuration of CWMP.

**show cwmp status**

Displays the running status of CWMP.

**Platform** N/A  
**Description**

## 7.8 cpe username

Use this command to configure the ACS username to be authenticated for the CPE to connect to the ACS.

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

**cpe username** *username*

**no cpe username**

Parameter Description	Parameter	Description
	<i>username</i>	Configures the CPE username to be authenticated for the ACS to connect to the CPE.

**Defaults** N/A

**Command Mode** CWMP configuration mode

**Usage Guide** Configures the CPE username to be authenticated for the ACS to connect to the CPE.

**Configuration Examples** The following example configures the CPE username to be authenticated for the ACS to connect to the CPE to admin.

```
Ruijie#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#cwmp
Ruijie(config-cwmp)#cpe username admin
Ruijie(config-cwmp)#
```

Related Commands	Command	Description
	<b>show cwmp configuration</b>	Displays the current configuration of CWMP.
	<b>show cwmp status</b>	Displays the running status of CWMP.
	<b>cpe password</b>	Configures the CPE password to be authenticated for the ACS to connect to the CPE.

**Platform** N/A  
**Description**



## 7.9 cwmp

Use this command to enable the CWMP function.

Use the **no** form of this command to disable this function.

**cwmp**

**no cwmp**

### Parameter Description

Parameter	Description
N/A	N/A

### Defaults

By default, this function is enabled.

### Command Mode

Global configuration mode

### Usage Guide

Use this command to enable or disable the CWMP function.

### Configuration Examples

The following example disables the CWMP function.

```
Ruijie#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#no cwmp
Ruijie(config)#
```

### Related Commands

Command	Description
<b>show cwmp configuration</b>	Displays the current configuration of CWMP.
<b>show cwmp status</b>	Displays the running status of CWMP.

### Platform

N/A

### Description

## 7.10 disable download

Use this command to disable the function of downloading main program and configuration files from the ACS. Use the **no** form of this command to restore the default setting.

**disable download**

**no disable download**

### Parameter Description

Parameter	Description
N/A	N/A

**Defaults** By default, the CPE can download main program and configuration files from the ACS.

**Command Mode** CWMP configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example disables the function of downloading main program and configuration files from the ACS.

```
Ruijie#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#cwm
Ruijie(config-cwm)#disable download
Ruijie(config-cwm)#
```

**Related Commands**

Command	Description
<b>show cwm configuration</b>	Displays the current configuration of CWMP.
<b>show cwm status</b>	Displays the running status of CWMP.

**Platform Description** N/A

## 7.11 disable upload

Use this command to disable the function of uploading configuration and log files to the ACS.

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

**disable upload**

**no disable upload**

**Parameter Description**

Parameter	Description
N/A	N/A

**Defaults** By default, the CPE can upload its configuration and log files to the ACS.

**Command Mode** CWMP configuration mode

**Usage Guide** Disables the function of uploading configuration and log files to the ACS.

**Configuration** The following example disables the function of uploading configuration and log file to the ACS.

**Examples**

```
Ruijie#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#cwmp
Ruijie(config-cwmp)#disable upload
Ruijie(config-cwmp)#
```

**Related  
Commands**

Command	Description
<b>show cwmp configuration</b>	Displays the current configuration of CWMP.
<b>show cwmp status</b>	Displays the running status of CWMP.

**Platform** N/A

**Description**

## 7.12 show cwmp configuration

Use this command to display the current configuration of CWMP.

**show cwmp configuration**

**Parameter  
Description**

Parameter	Description
N/A	N/A

**Defaults** N/A

**Command  
Mode** Privilege EXEC mode

**Usage Guide**

**Configuration** The following example displays the current configuration of CWMP.

**Examples**

```
Ruijie(config-cwmp)#show cwmp configuration
CWMP Status           : enable
ACS URL                : http://www.ruijie.com.cn/acs
ACS username           : admin
ACS password           : *****
CPE URL                : http://10.10.10.2:7547/
CPE username           : ruijie
CPE password           : *****
CPE inform status      : disable
CPE inform interval    : 60s
CPE inform start time  : 0:0:0 0 0 0
```

```

CPE wait timeout      : 50s
CPE download status   : enable
CPE upload status     : enable
CPE back up status    : enable
CPE back up delay time : 60s

```

The descriptions to the fields shown after executing the command **show cwmp configuration**.

Field	Description
CWMP Status	Running status of CWMP.
ACS URL	URL of the ACS.
ACS username	ACS username to be authenticated for the CPE to connect to the ACS.
ACS password	ACS password to be authenticated for the CPE to connect to the ACS.
CPE URL	URL of the CPE.
CPE username	CPE username to be authenticated for the ACS to connect to the CPE.
CPE password	CPE password to be authenticated for the ACS to connect to the CPE.
CPE inform status	Status of CPE periodical notification function.
CPE inform interval	CPE periodical notification interval.
CPE wait timeout	Timeout period of CPE sessions.
CPE inform start time	The start time of periodical notification.
CPE download status	Indicates whether to download main program and configuration files from the ACS.
CPE upload status	Indicates whether to upload configuration files and log files to the ACS.
CPE back up status	Indicates whether backup and restoration of the main program and configuration file is enabled.
CPE back up delay time	Delay time of the backup and restoration of the main program and configuration files.

#### Related Commands

Command	Description
<b>show cwmp status</b>	Displays the running status of CWMP.

**Platform** N/A

**Description**

## 7.13 show cwmp status

Uses this command to display the running status of CWMP

**show cwmp status**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the running status of CWMP.

**Examples**

```
Ruijie#show cwmp status
CWMP Status           : enable
Session status        : Close
Last success session   : Unknown
Last success session time : Thu Jan 1 00:00:00 1970
Last fail session      : Unknown
Last fail session time : Thu Jan 1 00:00:00 1970
Session retry times    : 0
```

The descriptions to the fields shown after executing the command **show cwmp configuration**.

Field	Description
CWMP Status	The running status of CWMP
Session status	The current status of the session between the CPE and the ACS
Last success session	The last success session type
Last success session time	The last success session time
Last fail session	The last failed session type
Last fail session time	The last failed session time
Session retry times	The number of session retransmission attempts

Related Commands	Command	Description
	<b>show cwmp configuration</b>	Displays the current configuration of CWMP.

**Platform Description** N/A

## 7.14 timer cpe-timeout

Uses this command to configure the session timeout period of the CPE.

**timer cpe- timeout seconds**

**no timer cpe-timeout**

**Parameter  
Description**

Parameter	Description
<i>seconds</i>	Sets the session timeout, in the range from 10 to 600 in the unit of seconds.

**Defaults** By default, the session timeout period is 30 seconds.

**Command  
Mode** CWMP configuration mode

**Usage Guide** Use this command to configure the session timeout period of the CPE.  
The maximum waiting period that the CPE has when the CPE failed to receive the ACS reply.

**Configuration** The following example configures the session timeout period of the CPE to 50 seconds.

**Examples**

```
Ruijie#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#cwmp
Ruijie(config-cwmp)#timer cpe-timeout 50
Ruijie(config-cwmp)#
```

**Related  
Commands**

Command	Description
<b>show cwmp configuration</b>	Displays the current configuration of CWMP.
<b>show cwmp status</b>	Displays the running status of CWMP.

**Platform  
Description** N/A

## 8 Syslog Commands

### 8.1 clear logging

Use this command to clear the logs from the buffer in privileged EXEC mode.

#### clear logging

Parameter	Parameter	Description
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 The following example clears the log packets from the memory buffer.

Examples Ruijie# **clear logging**

Related Commands	Command	Function
	<b>logging on</b>	Turns on the log switch.
	<b>show logging</b>	Displays the logs in the buffer.
	<b>logging buffered</b>	Records the logs in the memory buffer.

Platform Description N/A

### 8.2 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
-----------------------	-----------	-------------

<i>ip-address</i>	Sets the IP address of the host receiving log messages.
<i>vrf-name</i>	Sets the VRF instance connecting with the host.
<i>ipv6-address</i>	Sets the IPv6 address of the host receiving log messages.
<b>udp-port</b> <i>port</i>	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** The following example configures a syslog server with IP address 202.101.11.1.

**Examples** 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

## 8.3 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	Parameter	Description
<b>Description</b>	<i>buffer-size</i>	For the core switches, 4 K to 10 M bytes.
	<i>level</i>	Severity of logs, from 0 to 7. The name of the severity or the numeral can be used.



**Defaults** Core switches: 1 M 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.

 After running the system for a long time, modifying the log buffer size especially in condition of large buffer may fails due to the insufficient available 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
	<b>logging on</b>	Turns on the log switch.
	<b>show logging</b>	Displays the logs in the buffer.
	<b>clear logging</b>	Clears the logs in the log buffer.

**Platform**  
**Description**

N/A

## 8.4 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
	<i>level</i>	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**

The following example sets the severity of log that is allowed to be displayed on the console as 6:

**Examples**

```
Ruijie(config)# logging console informational
```

Related Commands	Command	Description
	<b>logging on</b>	Turns on the log switch.
	<b>show logging</b>	Displays the logs and related log configuration parameters in the buffer.

**Platform**  
**Description**

N/A

## 8.5 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	Parameter	Description
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
	<b>show logging count</b>	Displays log information about modules of the system.
	<b>show logging</b>	Displays basic configuration of log modules and log information in the buffer.

**Platform Description** N/A

## 8.6 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	Parameter	Description
Description	<i>facility-type</i>	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** The following example sets the device value of **Syslog** as **kernel**:

**Examples** Ruijie(config)# logging facility kern

Related Commands	Command	Description
	<b>logging console</b>	Sets the severity of logs that are allowed to be displayed on the console.

**Platform**  
**Description** N/A

## 8.7 logging file


Use this command to save log messages in the log file, which can be saved in hardware disk, expanded FLASH, USB. 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
	<b>flash</b>	Saves the log file in expanded FLASH.
	<b>usb0</b>	Saves the log file in USB0. This parameter is supported by the device with one USB connector and the USB extension device.
	<b>usb1</b>	Saves the log file in USB1. This parameter is supported by the device with two USB connectors and the USB extension device.
	<i>filename</i>	Sets the file name. The file type is omitted, which is fixed as txt.
	<i>max-file-size</i>	Sets the maximum file size, in the range from 128K to 6M bytes, The default is 128K,
	<i>level</i>	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** 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.

**Examples**

```
Ruijie(config)# logging file flash:syslog
```

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 8.8 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
<b>all</b>	Log messages destined to all directions are filtered, including console, VTY terminal, log buffer, log file and log server.
<b>buffer</b>	Log messages destined to the log buffer are filtered, including log messages displayed by running the <b>show logging</b> command.
<b>file</b>	Log messages destined to the log file are filtered.
<b>server</b>	Log messages destined to the log server are filtered.
<b>terminal</b>	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** Global configuration mode  
**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** N/A  
**Description**

## 8.9 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
<b>exact-match</b>	Exact-match filter rule. Fill in all the following three parameters.
<b>single-match</b>	Single-match filter rule. Fill in one of the following three parameters.
<b>module</b> <i>module-name</i>	Module name.
<b>mnemonic</b> <i>mnemonic-name</i>	Mnemonic name.
<b>level</b> <i>level</i>	Log level,

**Defaults** No filter rule is configured by default,

**Command** Global configuration mode  
**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

## 8.10 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
<b>contains-only</b>	The log message containing the key word of the filter rule is printed.
<b>filter-only</b>	The log message containing the key word of the filter rule is filtered.


**Defaults** The default filter type is filter-only.


**Command  
Mode** Global configuration 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 filter-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** The following example sets the filter type to contains-only.

**Examples** Ruijie(config)# logging filter type contains-only

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A  
**Description**

## 8.11 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** The following example writes log messages in the system buffer into the flash file immediately.

**Examples** Ruijie(config)# logging flash flush

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

## 8.12 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
<b>interval</b> <i>seconds</i>	The interval to write log messages into the flash file, in the range from 1 to 51840 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**

The following example sets the interval to write log messages into the flash file to 300 seconds.

**Examples**

```
Ruijie(config)# logging flash interval 300
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

## 8.13 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
<i>level</i>	Sets the log level, which can be either the level name or the level number.
<i>days</i>	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.

**Examples** Ruijie(config)# logging life-time level 6 10

### Related Commands

Command	Description
N/A	N/A

**Platform Description** N/A

## 8.14 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
-----------	-------------

<b>Parameter Description</b>	<i>level</i>	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.
<b>Defaults</b>	The default is debugging (7).	
<b>Command Mode</b>	Global configuration mode	
<b>Usage Guide</b>	<p>To print log information on the VTY window, run the <b>terminal monitor</b> command in privileged EXEC mode. The level of logs to be displayed is defined by <b>logging monitor</b>.</p> <p>The log level defined with "Logging monitor" is for all VTY windows.</p>	
<b>Configuration Examples</b>	<p>The following example sets the severity of log that is allowed to be printed on the VTY window as 6:</p> <pre>Ruijie(config)# logging monitor informational</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>logging on</b>	Turns on the log switch.
	<b>show logging</b>	Displays the log messages and related log configuration parameters in the buffer.
<b>Platform</b>	N/A	
<b>Description</b>		

## 8.15 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 function.

**logging on**

**no logging on**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	N/A	N/A
<b>Defaults</b>	Logs are allowed to be displayed on different devices.	
<b>Command Mode</b>	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** The following example disables the log switch on the device.

**Examples** Ruijie(config) # **no logging on**

Related Commands	Command	Description
	<b>logging buffered</b>	Records the logs to a memory buffer.
	<b>logging server</b>	Sends logs to the Syslog server.
	<b>logging file flash:</b>	Records logs on the expanded FLASH.
	<b>logging console</b>	Allows the log level to be displayed on the console.
	<b>logging monitor</b>	Allows the log level to be displayed on the VTY window (such as telnet window) .
	<b>logging trap</b>	Sets the log level to be sent to the Syslog server.

**Platform**  
**Description** N/A

## 8.16 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
	<i>number</i>	The number of logs that can be processed in a second in the range from 1 to 10000.
	<b>all</b>	Sets rate limit to all the logs with severity level 0 to 7.
	<b>console</b>	Sets the amount of logs that can be shown in the console in a second.
	<b>except</b>	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.
	<i>severity</i>	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 output 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

## 8.17 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	Parameter	Description
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
	<b>show logging count</b>	Displays log information about modules of the system.
	<b>show logging</b>	Displays basic configuration of log modules and log information in the buffer.

Platform  
Description

N/A

## 8.18 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
	<i>number</i>	Log information that can be re-directed each second, ranging from 1 to 10,000 logs
	<b>except</b>	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.
	<i>severity</i>	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
	<b>show logging count</b>	Displays log information about modules of the system.
	<b>show logging</b>	Displays basic configuration of log modules and log information in the buffer.

<b>Platform</b>	N/A
<b>Description</b>	

## 8.19 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** ] { *ip-address* | **ipv6** *ipv6-address* } [ **udp-prot** *port* ] [ **vrf** *vrf-name* ]

**no logging server** [ **oob** ] { *ip-address* [ **vrf** *vrf-name* ] | **ipv6** *ipv6-address* }


**no logging server** { *ip-address* [ **vrf** *vrf-name* ] | **ipv6** *ipv6-address* } **udp-port**

Parameter	Parameter	Description
<b>Description</b>	<b>oob</b>	Specifies out-of-band communication for the logging server. (logs are sent through the MGMT port to the logging server.)
	<i>ip-address</i>	IP address of the host that receives log information.
	<i>vrf-name</i>	Specifies the VRF instance (VPN device forwarding table) connecting to the log host.
	<i>ipv6-address</i>	Specifies IPV6 address for the host receiving the logs.
	<b>udp-port</b> <i>port</i>	Specifies the port number for the specified host (The default port number is 514).

**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
	<b>logging on</b>	Turns on the log switch.
	<b>show logging</b>	Displays log messages and related log configuration parameters in the buffer.
	<b>logging trap</b>	Sets the level of logs allowed to be sent to Syslog server.

Platform  
Description

N/A

## 8.20 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  
Description

Parameter	Description
<i>interface-type</i>	Interface type.
<i>interface-number</i>	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

The following example specifies loopback 0 as the source address of the syslog messages:

Examples

```
Ruijie(config)# logging source interface loopback 0
```

Related Commands	Command	Description
	<b>logging server</b>	Sends logs to the Syslog server.

Platform  
Description

N/A

## 8.21 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	Parameter	Description
Description	<i>ip-address</i>	Specifies the source IPV4 address sending the logs to IPV4 log server.
	<i>ipv6-address</i>	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
	<b>logging server</b>	Sends the logs to the Syslog server.

**Platform Description** N/A

## 8.22 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	Parameter	Description				
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	<pre>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.</pre>					
Related Commands	<table><tr><th>Command</th><th>Description</th></tr><tr><td>show running-config</td><td>Displays the configuration.</td></tr></table>	Command	Description	show running-config	Displays the configuration.	
Command	Description					
show running-config	Displays the configuration.					
Platform Description	N/A					

## 8.23 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	Parameter	Description
Description	<i>level</i>	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.

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
	<b>logging on</b>	Turns on the log switch.
	<b>logging</b>	Sends logs to the Syslog server.
	<b>show logging</b>	Displays the log messages and related log configuration parameters in the buffer.

**Platform Description** N/A

## 8.24 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** The following example enables the logging function to record user log/exit.

**Examples** Ruijie(config)# logging user-info

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 8.25 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** The following example enables the logging function to record user operation.

**Examples** Ruijie(config)# logging user-info command-log

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 8.26 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** The following example sets the private syslog format.

### Examples

```
Ruijie(config)# service private-syslog
```

### Related Commands

Command	Description
N/A	N/A

### Platform

N/A

### Description

## 8.27 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 Commands**

Command	Description
<b>logging on</b>	Turns on the log switch.
<b>service timestamps</b>	Attaches timestamps to the logs.

**Platform Description** N/A

## 8.28 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** The following example sets the standard syslog format.

**Examples** Ruijie(config)# service standard-syslog

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A  
**Description**

## 8.29 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** The following example adds a system name in the log information:

**Examples** 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
<b>show logging</b>	Displays basic configuration of log modules and log information in the buffer.

**Platform  
Description**

N/A

## 8.30 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
<i>message-type</i>	The log type, including <b>Log</b> and <b>Debug</b> . The <b>log</b> type indicates the log information with severity levels of 0 to 6. The <b>debug</b> type indicates that with severity level 7.
<b>uptime</b>	Device start time in the format of *Day*Hour*Minute*Second, for example, 07:00:10:41.
<b>datetime</b>	Current time of the device in the format of Month*Date*Hour*Minute*Second, for example, Jul 27 16:53:07.
<b>msec</b>	Current time of the device in the format of Month*Date*Hour*Minute*Second*milisecond, for example, Jul 27 16:53:07.299
<b>year</b>	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 millisecond 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
<b>logging on</b>	Turns on the log switch.
<b>service sequence-numbers</b>	Enables serial numbers of logs.

**Platform  
Description** N/A

## 8. 31 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 %LINEPROTO-5-UPDOWN: Line protocol
on Interface FastEthernet 0/24, changed state to down.
015491: *Sep 19 02:46:28: Ruijie %LINK-3-UPDOWN: 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
<b>logging on</b>	Turns on the log switch.
<b>clear logging</b>	Clears the log messages in the buffer.

**Platform**

N/A

**Description**

## 8.32 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

N/A

#### Description

## 8.33 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

The following example displays the result of the **show logging count** command:

#### Examples

```
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
<b>logging count</b>	Enables the log statistics function.
<b>show logging</b>	Displays basic configuration of log modules and log information in the buffer.
<b>clear logging</b>	Clears the logs in the buffer.

#### Platform

N/A

#### Description

## 8.34 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

#### Parameter Description

Parameter	Description
N/A	N/A

#### 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

## 8.35 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**

The following example allows log information to be printed on the current VTY window:

**Examples**

```
Ruijie# terminal monitor
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

**Command  
History**

Version	Description
N/A	N/A

## 9 Monitoring Commands

### 9.1 fan mode

Use this command to configure the Operating Mode of Fans.

**fan mode** { **normal** | **quiet** | { **defined** [ **speed-level** *level* ] } }

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

**no fan mode**

Use the **default** form of this command to restore the default setting.

**default fan mode**

#### Parameter Description

Parameter	Description
<b>normal</b>	Indicates that the fans operate in standard mode (Normal Mode which is the default operating mode).
<b>quiet</b>	Indicates that the fans operate in quiet mode (Quiet Mode).
<b>defined</b>	Indicates that the fans operate in user-defined mode. (User Defined Mode) In user-defined mode, the rotating speed of each fan in the fan trays of the chassis is the same, which will not change as the system temperature changes. Therefore, the user-defined mode is not recommended.
<b>speed-level</b> <i>level</i>	speed-level <i>level</i> : In user-defined mode, it specifies the rotating speed level of the fans. Seven levels are available; that is, the value of level ranges from 1 to 7. The rotating speed level is level 3 by default.

#### Defaults

The default mode is **normal**.

#### Command Mode

Global configuration mode

#### Level

14

#### Usage Guide

Sets the fans to the normal mode, quiet mode or defined mode. After the operating mode of fans is configured, the starting speed of rotating is set under current temperature. The rotating speed of fans is automatically adjusted as the ambient temperature changes to achieve the best heat dissipation effect. In VSU mode, the fans in the two chassis operate in the same working mode.



The rotating speed of fans in user-defined mode is fixed. It can be set according to the level defined by users and will not automatically change as the temperature changes. Therefore, the

standard mode or quiet mode is recommended so that the rotating speed of fans will automatically change as the temperature changes to protect the device from over-temperature which may cause a fault of the device.

**Configuration** Fans operate in normal mode by default, and thus generate loud noise.

**Examples**

```
Ruijie(config)#fan mode quiet
```

When the ambient temperature is low, the user wants to adjust the rotating speed to the minimum to reduce noise to the most extent.

```
Ruijie(config)#fan mode defined speed-level 1
```

**Verification** Use the **show fan** command to display the operating mode of all the fan trays.

Use the **show fan detail** command to display the actual rotating speed of the internal small fans in each fan tray.

**Prompt** The quiet mode of fans is set successfully.

**Messages**

```
Fan mode has changed to user defined mode, with speed level 1.
```

The mode switching fails for the device error.

```
Failed to change fan mode, for device error.
```

**Common Errors** If the ambient temperature changes greatly and you choose the user-defined mode, the rotating speed of the fans cannot be adjusted intelligently, causing a poor heat dissipation effect.

**Platforms** N/A

## 9.2 power cycle

Use this command to power off the specified board, and then power it on.

**power cycle** [ **switch** *devid* ] **slot** *slotid* [ **interval** *seconds* ]

**Parameter Description**

Parameter	Description
<b>switch</b> <i>devid</i>	It is supported in VSU mode only. It specifies the chassis No. of the board to be powered on/off. By default, it refers to the current chassis.
<b>slot</b> <i>slotid</i>	Specifies the slot No. of the board to be powered on/off. The supervisor modules are inserted in M1 and M2 slots. The FE cards are inserted in FE1, FE2, FE3, and FE4 slots.



**interval** *seconds*

Specifies the time interval between power-off and the next power-on. The default interval is one second.

**Command Mode** Privileged EXEC mode

**Level** 14

**Usage Guide** This command is used to power off the specified board, and then automatically power it on.

-  The hardware is equipped with the power-on protection function. When the board temperature exceeds 50C, the board does not power on immediately after the power-on operation is performed. The board will automatically power on after the board temperature drops below 50C. If the board temperature is already below 50C when the power-on operation is performed, the board powers on at once. Therefore, the actual power-on time may exceed the value of interval.
-  Do not manually power off the active supervisor module of the chassis. When the specified board is the active supervisor module of the chassis, the system prompts an error. In VSU mode, do not manually power off the local active supervisor modules in the two chassis.

**Configuration Examples** The following example shows slot 3 in the chassis is already upgraded and the upgrade result will be activated by using this command.

```
Ruijie#power cycle slot 3
```

**Prompt Messages** The board is powered off successfully and will be powered on automatically after 5 seconds.

```
Slot 1/2 power off successfully, and will be on beyond 5 seconds.
```

The board is already powered off and will be powered on automatically after 5 seconds.

```
Slot 1/2 is already off, and will be on beyond 5 seconds.
```

The input slotid is not right.

```
Input slotid(L2) is error.
```

The device does not exist.

```
Device 2 does not exist.
```

The active supervisor module is not allowed to be manually power off.

```
Slot 1/M1 is master board, it cannot be control to power off.
```

The board does not exist.

```
Card in slot 1/2 is not inserted.
```

Operating mistakes cause power-on/off failure.

```
Failed to power cycle slot 1/2 for device error.
```

**Platforms** N/A

## 9.3 power on/off

Use this command to power on or off the specified board.



**power** { **on** | **off** } [ **switch** *deviid* ] **slot** *slotid*

Parameter Description	Parameter	Description
	<b>on</b>	Powers on the specified board.
	<b>off</b>	Powers off the specified board.
	<b>switch</b> <i>deviid</i>	It is supported in VSU mode only. It specifies the chassis No. of the specified board to be powered on/off. By default, it refers to the current chassis.
	<b>slot</b> <i>slotid</i>	Specifies the slot No. of the board to be powered on/off. The supervisor modules are inserted in M1 and M2 slots. The FE cards are inserted in FE1, FE2, FE3, and FE4 slots.

**Command Mode** Privileged EXEC mode

**Level** 14

**Usage Guide** This command is used to power on/off the specified board.

-  The hardware is equipped with the power-on protection function. When the board temperature is higher than 50C, the board cannot be powered on and the system prompts that power-on failed.
-  Do not manually power off the active supervisor module of the chassis. When the specified board is the active supervisor module of the chassis, the system prompts an error. In VSU mode, do not manually power off the local active supervisor modules in the two chassis.

**Configuration Examples** The following example displays switch 2 slot 3 power-off.

```
Ruijie#power off switch 2 slot 3
Slot 2/3 power off successfully.
```

**Prompt Messages** The power-on is successful.

```
Slot 1/2 power on successfully.
```

The power-off is successful.

```
Slot 1/2 power off successfully.
```

The power is already on.

```
Slot 1/2 is already on.
```

The power is already off.

```
Slot 1/2 is already off.
```

The input slotid is not right.

```
Input slotid(L2) is error.
```

The device does not exist.

```
Device 2 does not exist.
```

The active supervisor module is not allowed to be manually power off.

```
Slot 1/M1 is master board, it cannot be control to power off.
```

The board does not exist.

```
Card in slot 1/2 is not inserted.
```

Over temperature on the current board cause power-on failure.

```
Failed to power on slot 1/2 for the card temperature is too high. Please  
try again later.
```

Operating mistakes cause power-on failure.

```
Failed to power on slot 1/2 for device error.
```

Operating mistakes cause power-off failure.

```
Failed to power off slot 1/2 for device error.
```

**Platforms**      N/A

## 9.4 power priority

Use this command to set the power supply priority of a line card.

**power priority** [**switch** *deviid*] **slot** *slotid* *prio*

Use this command to save the power-on priority.

**power priority save**

Use the **no** form of this command to restore the default priority with the power supply priority of a line card cancelled.

**no power priority** [**switch** *deviid*] **slot** *slotid*

Use the **default** form of this command to restore the default setting. **default power priority** [**switch** *deviid*] **slot** *slotid*



Parameter Description	Parameter	Description
	<b>switch</b> <i>devid</i>	It is supported in VSU mode only. Specifies the chassis No. of the board whose power-on/power-off priority is to be configured. By default, it refers to the current chassis.
	<b>slot</b> <i>slotid</i>	Specifies the slot No. of the line card whose power-on/power-off priority is to be configured. Depending on the chassis type, a chassis may have 3 slots, 5 slots, 8 slots, or 12 slots.
	<i>prio</i>	Specifies the line card priority to be set, ranging from 1 to 16, where 1 indicates the lowest priority and 16 the highest priority.
	<b>save</b>	Saves the power-on priority
<b>Defaults</b>	By default, the line card is not automatically powered off based on the power supply priorities in the case of insufficient system power.	
<b>Command Mode</b>	Global configuration mode	
<b>Level</b>	14	
<b>Usage Guide</b>	The power supply priorities of boards decide the power-on sequence of the boards. The higher the priority is, the earlier the power-on is. This command is used to change the default power supply priority of a line card or VSL card. The power supply priority of an FE card is defined by default, which cannot be changed.	
<b>Configuration Examples</b>	<p>The following example uses slot 3 as a back-up link with lower priority in VSU mode.</p> <pre>Ruijie(config)#power priority switch 2 slot 3 1</pre> <p>The following example configures slot 3 with the lowest priority in standalone mode which changes topology of networks and then adjust the priority to the highest.</p> <pre>Ruijie(config)#no power priority slot 3 Ruijie(config)#power priority slot 3 16</pre> <p>The following example introduces configuration files into the device in standalone mode and saves the power-on priority configuration of the line card.</p> <pre>Ruijie(config)#power priority save</pre>	
<b>Verification</b>	Use the <b>show power priority</b> command to display the current power supply priorities of all line cards and check whether the automatic power-off function is enabled on the line cards.	
<b>Prompt Messages</b>	<p>The device does not exist.</p> <pre>Device 2 does not exist.</pre>	

The board card does not exist.

Card in slot 1/2 is not inserted.

Operating mistakes cause priority configuring failure.

Failed to set slot 1/2 priority, for device error.

**Common Errors** N/A

**Platforms** N/A

## 9.5 power redundancy

Use this command to enable the N+M redundancy mode of the power supply.

**power redundancy** [ **switch** *devic* ] **pwrs enable**

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

**no power redundancy** [ **switch** *devic* ]

Use the **default** form of this command to restore the default setting. **default power redundancy**

[ **switch** *devic* ]

**Parameter Description**

Parameter	Description
<b>switch</b> <i>devic</i>	It is supported in VSU mode only. Specifies the chassis No. of the board slot requiring power redundancy. By default, it refers to the current chassis.
<i>pwrs</i>	Specifies the number M of redundant power modules.

**Defaults** This function is disabled by default.

**Command Mode** Global configuration mode

**Level** 14

**Usage Guide** This command is used to enable the N+M redundancy mode of the power supply. By default, the power supply operates in non-redundancy mode. Use this command to configure power redundancy and specify the number of redundant power modules. N+M indicates the number of power modules in the chassis. N indicates the number of power modules that can normally supply power. M indicates the number of redundant power modules.

**Configuration**

N/A

**Examples****Verification**

Use the **show power** command to check whether power redundancy takes effect and check the number of redundant powers.

**Prompt**

The power redundant configuration is successful.

**Messages**

```
Set power redundancy successfully.
```

Intermixed power modules cause redundant configuration failure.

```
Failed to set power redundancy, for power is mix.
```

Insufficient system power causes redundant configuration failure.

```
Failed to set power redundancy, for power is not enough.
```

The operating mistakes cause redundant configuration failure.

```
Failed to set power redundancy, for device error.
```

The device does not exist.

```
Device 2 does not exist.
```

**Common**

1. When power modules are intermixed, power redundancy cannot be configured.

**Errors**

2. When the system power is insufficient, power redundancy fails.

3. In VSU mode, power redundancy cannot be configured when the chassis is not added to a stack.

**Platforms**

N/A

## 9.6 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 speed regulation pattern, actual rotating speed and other information.

**show fan** [ { [ *devid* ] *fanid* ] **detail** } | **version** ]

**Parameter  
Description**


Parameter	Description
<i>devid</i>	It is supported in VSU mode only. When it specifies the display of detailed information about one single fan tray, it is used to specify their chassis number.
<i>fanid</i>	Specifies the display of detailed information about fan tray ID. By default, it refers to full display. When one singled fan tray is specified in VSU mode, by default

detail	Displays more detailed fan information. Displays the rotating speed of the internal small fans in each fan tray besides the displayed content by running the show fan command. Displays detailed failure information if the fan is in failure. Detailed information of all fan trays is enabled by default. When it specifies fan tray ID, only the detailed information of the corresponding fan tray is displayed.
version	Displays the fan version.

**Command Mode** Privileged EXEC mode

**Level** 14

**Usage Guide** Use the show fan command to display the fan information about fans in the slave chassis. Use the show fan command without parameters to display the module number, serial number, operating status and speed adjustment mode of all the fan trays.

 Use the show fan detail command to further displays detailed failure causes when the fan stray is in failure.

**Configuration Examples** N/A

**Prompt Messages** N/A

**Platforms** N/A

## 9.7 show power

Use this command to display power information including that of its basic condition, redundancy, allocation and version and etc.

show power [ priority | version ]

Parameter Description	Parameter	Description
	priority	Displays the power supply priority configuration of all boards and checks whether the automatic power-off function is enabled.
	version	Displays the serial number, hardware and software version as well as other information about each power.

---

<b>Command Mode</b>	Privileged EXEC mode
<b>Level</b>	14
<b>Usage Guide</b>	<p>This command is used to display power information about the slave chassis, and the command without parameters is used to display the most fundamental power information including:</p> <ul style="list-style-type: none"><li>● Display the power redundancy mode and check whether power redundancy takes effect and the like.</li><li>● Display the model, on-off status, rated and out power, output current, input and output voltage, Fail/ alarm status (specific to input overvoltage / undervoltage alarm, output overvoltage/undervoltage alarm, temperature alarm, fan failure alarm and over-temperature alarm and etc. ) of each power on every slot.</li><li>● Display the system's total power, allocated and occupied power and available power.</li><li>● Display the name, demanded power and allocated power of each board on every slot and power supply status of each slot.</li></ul>
<b>Configuration Examples</b>	N/A
<b>Prompt Messages</b>	N/A
<b>Platforms</b>	N/A

## 9.8 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 and threshold configuration of each board. The temperature threshold of CA products involves the alarm threshold and the hazard threshold. Alarm threshold: When the temperature of the board exceeds the alarm threshold, the active supervisor module generates a Syslog message and the Alarm LED on the panel becomes yellow.

Hazard threshold: It indicates the power-off temperature. When the temperature of the board exceeds the hazard threshold, the board powers off automatically. In addition, the active supervisor module generates a Syslog message and the Alarm LED on the panel becomes red.

**Configuration Examples** N/A

**Prompt Messages** N/A

**Platforms** N/A

## 9.9 threshold set temperature

Use this command to set the temperature threshold for the board.

**threshold set temperature** [*switch devid*] {**board** | **cpu** | **mac**} {**warning** | **shutdown**} *temp*

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



**no threshold set temperature**

Use the **default** form of this command to restore the default setting.

**default threshold set temperature**

**Parameter Description**

Parameter	Description
<b>switch</b> <i>devid</i>	It is supported in VSU mode only. It specifies the chassis No. of the board whose temperature thresholds are to be configured. By default, it refers to the current switch.
<b>board</b>	Specifies the temperature thresholds of the main board, including the temperatures of the air inlet, air outlet, and the hottest points on the main board. The temperature thresholds of the main boards are the same for all the boards.
<b>cpu</b>	Specifies the CPU temperature thresholds. The CPU temperature thresholds are the same for all the boards.
<b>mac</b>	Specifies the MAC temperature thresholds. The MAC temperature thresholds are the same for all the boards.
<b>warning</b>	Specifies the alarm threshold of the board temperature. When the temperature detection point is <b>cpu</b> or <b>mac</b> , this key word is invisible.
<b>shutdown</b>	Specifies the hazard threshold (that is, the power-off threshold) of the board temperature.
<i>temp</i>	Specifies the temperature threshold.

<b>Defaults</b>	<p>Only the main board temperature involves both an alarm threshold and a hazard threshold.</p> <p>The alarm threshold of the main board temperature is 56C and the hazard threshold is 80C; the hazard threshold of the CPU and MAC temperatures is 100C, and the CPU and MAC temperatures do not involve any alarm threshold by default.</p>
<b>Command Mode</b>	Global configuration mode
<b>Level</b>	14
<b>Usage Guide</b>	<p>Use the show temperature command to check the alarm and hazard thresholds of the current board. The alarm threshold of the main board temperature is 56C and the hazard threshold is 80C; the hazard threshold of the CPU and MAC temperatures is 100C, and the CPU and MAC temperatures do not involve any alarm threshold by default. The <b>no</b> form of this command is used to remove the hazard thresholds of all boards. In VSU mode, the thresholds of two chassis will be both removed and restored to the default setting.</p> <hr/> <p> The hazard threshold of the main board temperature cannot exceed 90C. The hazard thresholds of the CPU and MAC temperatures cannot exceed 110C.</p> <p> The hazard thresholds of the CPU and MAC temperatures cannot exceed 110C.</p> <hr/>
<b>Configuration Examples</b>	<p>The following example configures the warning threshold of the main board as 75°C to stop high-temperature alerts .</p> <pre>Ruijie(config)#threshold set temperature board warning 75</pre> <p>The following example configures the temperature alarm threshold of the main board in the two chassis as 75°C in VSU mode.</p> <pre>Ruijie(config)#threshold set temperature switch 1 board warning 75 Ruijie(config)#threshold set temperature switch 2 board warning 75</pre>
<b>Verification</b>	Use the <b>show temperature</b> command to display the alarm and hazard thresholds of the current board.
<b>Prompt Messages</b>	<p>The device does not exist.</p> <pre>Device 2 does not exist.</pre> <p>2. The alarm threshold set is higher than the hazard threshold.</p> <pre>The warning temperature must be less than the shutdown temperature(80).</pre> <p>Operating mistakes cause temperature threshold configuration failure.</p> <pre>Failed to set temperature threshold, for device error.</pre>
<b>Common Errors</b>	<p>1. When the thresholds exceed the allowed values, the threshold settings are invalid.</p> <p>2. When the alarm thresholds are excessively low, the system frequently generates alarm logs.</p>

---

<b>Platforms</b>	N/A
------------------	-----



## 10 LICENSING Commands

### 10.1 license copy

Use this command to back up a license file.

**license** { **copy-all** | **copy-file** *filename* } { **flash:** | **usb0:** } [*target-filename*]

Parameter description	Parameter	Description
	<b>copy-all</b>	Copies all permanent license files in the system.
	<b>copy-file</b>	Copies the <i>filename</i> license file in the system. And <i>filename</i> can be the name of a license file already installed in the system or the name of a feature. When <i>filename</i> is a feature name, all license files already installed for this feature are backed up.
	<i>filename</i>	The name of a license file already installed in the system or the name of a feature
	<b>flash:</b>	Specifies that the license file is installed in the internal flash file system.
	<b>usb0:</b>	Specifies that the license file is installed in the USB file system.
	<i>target-filename</i>	Specifies the name of the license file.

**Command Mode** Privileged EXEC mode



**Default Level** 4

**Usage Guide** When you back up all license files in the system, a tar file is generated. This command does not require authorization.  
Both one license file and all license files of a certain feature can be copied.

**Configuration Examples** The following example backs up all license files in the system into file-rg-license-lics in a USB flash drive (there must be this path) and name the backup lics.tar.

```
Ruijie#lic copy-all usb0:rg-license-lics/lics.tar
Success to copy all permanent license.
```

**Verification** You can run the **dir** command to check whether the license file backup is generated. In addition, you can check whether the backup is correct by comparing the output of the **dir** command with the license file name in the **installed license** field of the feature with permanent authorization displayed by running the **show license all\_license** command.

-  Only a multi-instance license file has the **installed license** field. The multi-instance license file backup is named after the ID of the multi-instance license file. At most one single-instance license file exists in the system at a time; therefore, the single-instance license file backup is named after the feature.
-  In this example, the IDs 19881021.lic and 19881023.lic are embedded in the license file. License files are stored in different folders based on the features during the packing; therefore, users can still identify the mapping between license files and features.

**Prompt**

There is not permanent license in the system for backup.

**Messages**

```
Copy failed, there's no permanent license in the system.
```

All license files in the system are successfully backed up.

```
Success to copy all permanent license.
```

The error message is displayed if no feature or license file is specified on the device.

```
Copy failed, there's no such service or license installed in the system.
```

The error message is displayed if the specified license file is temporary.

```
Copy failed, the license is temporary.
```

The specified license file is backed up successfully.

```
Success to copy license vsd.lic.
```

**Common**

Specify a license file or a file not in the system.

**Errors**

Specify a temporary license file for backup (a temporary license file cannot be backed up).

## 10.2 license grace-period

Use this command to set the time of issuing a warning before the validity period of a license file expires. Use the **no** or **default** form of this command to restore the default setting.

**license grace-period** *license days*

**no license grace-period** *filename*

**default license grace-period** *filename*

**Parameter  
Description**

Parameter	Description
<i>filename</i>	The name of the license file for a feature
<i>days</i>	The period from the expiry time to the warning time

**Defaults**


The default value is the smaller one between 120 and half the evaluation license file's validity period.

**Command Mode** Privileged EXEC mode

**Default Level** 4

**Usage Guide** When the timeout interval of a license file is shorter than the friendly period, the friendly period warning is generated once a day; and the warning is generated once an hour one day before the license file expires. Friendly period warning is issued in log or SNMP TRAP form.

 This command does not require authorization.

 An evaluation license file needs to be configured with friendly period warning. A permanent license file does not need to be configured with friendly period warning.

**Configuration Examples** The following example shows that the temporary license file for the VSD feature has already been installed on the device, and the friendly period warning time is set to 100 days.

```
Ruijie#license grace-period LIC-VSD 100
Success to set alarm starting point of license LIC-VSD.
```

**Verification** When the validity period of the license file for the VSD feature is shorter than 100 days, the friendly period warning is displayed at regular intervals.

**Prompt** The setting is successful.

**Messages** Success to set alarm starting point of license LIC-VSD.

The specified license file is not in the system.

There's no license abc in the system.

**Common Errors** Specify a license file not in the system.

## 10.3 license install

Use this command to install a license file.

**license install** { **flash:** | **usb0:** } *filename*

**Parameter Description**

Parameter	Description
<b>flash:</b>	Specifies that the license file is installed in the internal flash file system.
<b>usb0:</b>	Specifies that the license file is installed in the USB file system.
<i>filename</i>	Specifies the name of the license file.

**Command Mode** Privileged EXEC mode

**Default Level** 4

**Usage Guide** The name of the license file can be modified. This command does not require authorization.

**Configuration Examples** The following example obtains the host ID of the device, registers at the authorization website, obtains and installs the license file of the VSD function.

```
Ruijie#show license hostid
8708EH5F00042
Ruijie#license install usb0:vsd.lic
License file install success, service name: LIC-VSD.
```

**Verification** Run the **show license all\_license** command to check the license name. If the license name is displayed, the corresponding license file is installed.

**Prompt** The specified license file is not in the system.

**Messages** Install failed: no such file or directory.

The specified license file is not legal.

Install failed: the install license may be wrong.

The specified license file is newer than the installed one.

Install failed: the system already has a same license which is newer.

The license file is reinstalled.

Install failed: the license has been installed before.

The specified license file is temporary and there is the same permanent one.

Install failed: The system already has a same permanent license.

The license file is installed successfully (use the license file for VSD as an example).

License file install success, service name: LIC-VSD.

The license file is installed successfully and becomes permanent (use the license file for VSD as an example).

License file install success, service name: LIC-VSD.

The license turns to be permanent.

The license file is installed successfully whose expiry date is close (use the license file for VSD as an example).

License file install success, service name: LIC-VSD.;

The installed license is approaching deadline, less than 30 days.

- Common** Specify a license file not on the device.
- Errors** Specify a license file illegal.
- Specify a license file to install older than existing one in the system.
- Reinstall the license file.
- Replace the permanent license file with the temporary license file.

## 10.4 license unbind

Use this command to unbind a license.


**license unbind** *pak*


Parameter Description	Parameter	Description
	<i>pak</i>	The license code

**Command Mode** Privileged EXEC mode

**Default Level** 4

**Usage Guide** This command does not require the license.

 Use this command to unbind a license from the bound device before performing unbinding on the Web page.

 You will get an authenticcode after unbinding the license from the device, which is necessary for unbinding operation on the Web page.

**Configuration Examples** The following example unbinds license code LIC-FCOE00000012268888.

```
Ruijie#license unbind LIC-FCOE00000012268888
Success to unbind license LIC-FCOE00000012268888.
The verification string is
775719468737BA269825589557F558657575B5D5D5D785782598859765A8355855.
```

## 10.5 license uninstall

Use this command to remove a license file.

**license uninstall** { *all* | *license* [ *filename* ] }


Parameter Description	Parameter	Description
	<i>all</i>	Removes all license files in the system.


<i>license</i>	The name of the license to be removed
<i>filename</i>	The name of the file to be removed

**Command Mode** Privileged EXEC mode

**Default Level** 4

**Usage Guide** This command does not require authorization.

 After you remove the license file for a feature that is running, the license file removal does not take effect immediately.

 A license file cannot be restored after it is removed. It is recommended that you back up the license file before removing it.

### Configuration Examples

**Verification** Run the **show license all\_license** command to view the **Service name** filed. If the name of a feature corresponding to a license file already removed is not displayed, the removal is successful.

**Prompt** The specified license file is not on the device. (it is named after defd in this example).

**Messages** `Uninstall failed: there's no license defd in the system.`

The specified license file of the specified feature is not on the device (The specified feature is LIC-WLAN-AP-32 and the specified license is named 123.lic).

`Uninstall failed: there's no license 123.lic of service LIC-WLAN-AP-32 in the system.`

The single instance license does not support license based uninstalling.

`Uninstall failed: single instance license does not support license based uninstalling.`

The removing of a license file is successful (LIC-WLAN-AP-32 is the name of the specified file and AP32\_1.lic is a license file in this example).

`Uninstall license AP32_1.lic of service LIC-WLAN-AP-32 success.`

**Common Errors** The license file has not been installed on the device.  
Specify a license file not on the device.

Remove a certain license file for a single-instance feature (One single-instance license does not support the removing of one single file).

## 10.6 license update

Use this command to update a license file.

**license update** { **flash:** | **usb0:** } *filename*

Parameter Description	Parameter	Description
	<b>flash:</b>	Specifies that the license file is installed in the internal flash file system.
	<b>usb0:</b>	Specifies that the license file is installed in the USB file system.
	<i>filename</i>	Specifies the name of the license file.

**Command Mode** Privileged EXEC mode

**Default Level** 4

**Usage Guide** This command does not require authorization. The name of a license file can be modified.

**Configuration Examples** N/A

**Verification** Run the **show license** command to check the **Attribute** field. If the field is displayed as Permanent, the corresponding attribute is updated.

**Prompt** The specified license file is not in the system.

**Messages** Update failed: No such file or directory.

The specified license file is not legal.

Update failed: the update license may be wrong.

The specified license file is newer than the installed one.

Update failed: the new installed license is older than the system one.

The license file is reinstalled.

Update failed: the license has been installed before.

The temporary license file cannot be replaced by a permanent one.

Update failed: the period license cannot replace permanent license.

The specified license file is not on the device before the corresponding feature of the license file is to be installed first.

Update failed: now the system does not have the license.

Try "license install" instead.

- Common** Install a license file that does not belong to the present device.
- Errors** Replace the license file of the new version with the old version.
- Reinstall an updated license file.
- Replace the permanent license file with the temporary license file.
- Start update when the corresponding feature is not licensed for the system.

## 10.7 show license

Use this command to check a license file for the device.

**show license** { **all-license** | **file** [ *license* ] }

Parameter Description	Parameter	Description
	<b>all-license</b>	The list of all license files already installed on the device
	<b>file</b> <i>filename</i>	The name of a specified license file

**Command Mode** Privileged EXEC mode

**Default Level** 2

**Usage Guide** This command does not require authorization. It displays the license information of the system.

**Configuration Examples** The following example displays the information of all the license files installed in the system.

```
Ruijie#show license all-license
Searching license in the system...
1. Service name: LIC-AP-64
   Attribute: Releasable
   [Permanent licenses]      [Licensed serial number]
   19880966.lic              LIC-AP-6400000012264966
   19880988.lic              LIC-AP-6400000012264988

   [Temporary license]      [Licensed serial number]
   19880900.lic              LIC-AP-6400000012264900
   (63 days left)
```



## 10.8 show license hostid

Use this command to display the host ID for the license (one device).

**show license hostid**

Parameter Description	Parameter	Description
	N/A	N/A

**Command Mode** Privileged EXEC mode

**Default Level** 2

**Usage Guide** This command does not require authorization. There is a unique serial number for identifying each device.

**Configuration Examples** The following example displays the host ID for the license (one device).

```
Ruijie#show license hostid
1234942570021
```

## 10.9 show license unbind-code

Use this command to display the unbound license code on the current device.

**show license unbind-code**

Parameter Description	Parameter	Description
	N/A	N/A

**Command Mode** Privileged EXEC mode

**Default Level** 2

**Usage Guide** This command does not require license.

**Configuration Examples** The following example displays unbound license code on the current device.

```
Ruijie#show license unbind-code
LICENSE                UNBINDING-CODE
LIC-VSD00000012264933
77571FF68737BFF69FF55FF57F55FF57575B595E58587857FF59FF59765AFF55FF5
```

```
LIC-FCOE00000012264966
77571FF68737BFF69FF55FF557F55FF57575B595E5B5B7857FF59FF59765AFF55FF5
LIC-TRILL00000012264988
77571FF68737BFF69FF55FF557F55FF57575B595E5D5D7857FF59FF59765AFF55FF5
```

Field	Description
LICENSE	Unbound license code.
UNBINDING-CODE	Authenticode for license unbinding.

## 10.10 show license usage

Use this command to display the status of current license file in the system.

**show license usage**

Parameter Description	Parameter	Description
	N/A	N/A

**Command Mode** Privileged EXEC mode

**Default Level** 2

**Usage Guide** This command does not require authorization.

**Configuration Examples** The following example displays the status of current license file in the system.

```
Ruijie#show license usage
Searching license in the system...
1. Service name: LIC-AP-64
   Attribute: Releasable
   [Permanent licenses]      [Licensed serial number]
   19880966.lic              LIC-AP-6400000012264966
   19880988.lic              LIC-AP-6400000012264988

   [Temporary license]      [Licensed serial number]
   19880900.lic              LIC-AP-6400000012264900
   (63 days left)
```

Field Description

Field	Description
Service name	The feature name of the license file
Attribute	The attributes of the license file

---

Left days	The remaining days of the expiry time of the license file
-----------	---

## 11 Module Hot-plugging Commands

### 11.1 remove configuration module slot-num

Use this command to remove the module configurations.

**remove configuration module** *slot-num*

Parameter Description	Parameter	Description
	<i>slot-num</i>	Slot number.

**Defaults** N/A

**Command Mode** Global configuration mode.

**Usage Guide** Use this command to remove the module configurations. This command is invalid for module in on-line status. If there is a module inserted in the slot, this module will be reset.

#### Configuration

**Examples** Ruijie(config)# remove configure module 4

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 11.2 remove configure device device-id

Use this command to remove the configuration on a VSU device, which validates in VSU mode after restart.

**remove configure device** *device-id*

Parameter Description	Parameter	Description
	<i>device-id</i>	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 The following example clears the configuration on device 1.

Examples 

```
Ruijie(config)# remove configure device 1
```

Related Commands

Command	Description
N/A	N/A

Platform N/A  
Description

## 11.3 reset module slot-num

Use this command to reset a module.

**reset module** *slot-num*

Parameter Description

Parameter	Description
<i>slot-num</i>	Slot number.

Defaults N/A

Command Mode Privileged EXEC mode

Usage Guide Use this command to reset a module.

Configuration

Examples 

```
Ruijie# reset module 4
```

Related Commands

Command	Description
N/A	N/A

Platform N/A  
Description

## 11.4 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 Privileged EXEC mode  
Mode

Usage Guide This command is used to display asset information about all independent components in the system

Configuration The following example displays asset information of the single physical device.

#### Examples

```
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

## 11.5 show version module detail [ *module-num* ]

Use this command to display the details of the module.

**show version module detail** [*slot-num*]

Parameter Description	Parameter	Description
	<i>slot-num</i>	(Optional) Module number.

**Defaults** N/A

**Command  
Mode** Privileged EXEC mode.

**Usage Guide** Use this command to display details of the module

**Configuration** Ruijie# **show version module detail** 2

**Examples**

```
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
	<b>show version slots</b>	Displays slot details.

**Platform  
Description** N/A

## 11.6 show version slots [ *slot-num* ]

Use this command to display the details of the slot.

**show version slots** [*slot-num*]

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<i>num</i>	(Optional) Slot number.
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Privileged EXEC mode.	
<b>Usage Guide</b>	N/A	
<b>Configuration Examples</b>	<pre> Ruijie# <b>show version slots</b> 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 </pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show version moduel detail</b>	Displays the details of the module.
<b>Platform Description</b>	N/A	

## 11.7 no sysmac

Use this command to remove a MAC address from the system.

**no sysmac**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	N/A	N/A
<b>Defaults</b>	N/A	
<b>Command Mode</b>	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 The following example deletes the MAC address saved in the configuration file.

Examples 

```
Ruijie#no sysmac
```

Related  
Commands

Command	Description
N/A	N/A

Platform  
Description

N/A

## 12 Supervisor Module Redundancy Commands

### 12.1 auto-sync time-period

Use this command to configure the auto-sync time-period of running-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
	<i>value</i>	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

## 12.2 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** The following example enters redundancy configuration mode.

**Examples**

```
Ruijie# config terminal
Ruijie(config)# redundancy
Ruijie(config-red)# exit
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 12.3 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** The following example performs active/standby supervisor module switchover.

**Examples**

```
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
<b>reload</b>	Resets the active supervisor module.


**Platform** N/A  
**Description**

## 12.4 redundancy reload

Use this command to reset the supervisor module.

**redundancy reload { peer | shelf [ switchid ] }**

**Parameter  
Description**

Parameter	Description
<b>peer</b>	Resets the standby supervisor module.
<b>shelf</b>	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.
<i>switchid</i>	VSU device ID, supported on a VSU device.   This parameter is not supported in stand-alone mode. It must be contained in the <b>redundancy reload shelf</b> command in VSU mode.

**Defaults** N/A

**Command Mode** Privileged EXEC 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** The following example resets the standby supervisor module.

**Examples**

```
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

## 12.5 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** The following example displays the redundancy states of active supervisor module.

**Examples**

```
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 VSD1 and 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** N/A**Description**

## 13 USB Commands

### 13.1 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**

The following example displays the information about the USB device:

**Examples**

```
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

## 13.2 usb remove

Use this command to remove the USB device.

**usb remove** *device\_id*

**Parameter  
Description**

Parameter	Description
<i>device_id</i>	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** The following example removes the USB device.**Examples**

```
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



## 14 ZAM Commands

### 14.1 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

### 14.2 zam

Use this command to enable ZAM. Use the **no** form of this command to disable ZAM.

**zam**

**no zam**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

---

**Command Mode** Global configuration mode

**Usage Guide**

**Configuration** The following example disables ZAM.

**Examples**

```
Ruijie(config)# no zam
Ruijie(config)#
```

**Platform Description** N/A

## 15 PKG\_MGMT Commands

### 15.1 clear storage

Use this command to remove an installation package on the local device.

**clear storage** [ *url* ]

Parameter Description	Parameter	Description
	<i>url</i>	A local <i>url</i> directory or full path name indicates 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	<pre>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#</pre>	
Verification	Check specified <i>url</i>	
Platforms	N/A	

### 15.2 show component

Use this command to display all components already installed on current device and their information.

**show component** [ slot { *num* | M1 | M2 | all } ] [ *component \_name* ]


Parameter Description	Parameter	Description
	slot <i>num</i>	This parameter is used on a chassis device. It indicates a corresponding line card based on the slot number.

<b>slot all</b>	This parameter is used on a chassis device. It indicates all devices.
<b>slot M1</b>	This parameter is used on a chassis device. It specifies that the operation is performed on supervisor module M1.
<b>slot M2</b>	This parameter is used on a chassis device. It specifies that the operation is performed on supervisor module M2.
<i>component_name</i>	<p>Name of the components</p> <p>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.</p> <p>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.</p>

**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 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
-----

```

**Prompt**

The execution is successful with all components information displayed.

**Messages**

```

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
-----

```

## 15.3 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  
Level**

2

**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** The auto-sync information of the system is displayed after running.

**Messages**

```
Ruijie#show upgrade auto-sync
auto-sync policy: coordinate
auto-sync range: vsu
auto-sync package: flash:/eg1000m_main_1.0.0.0f328e91.bin
```

## 15.4 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
	<i>url</i>	The local <i>url</i> 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** The following example displays the information of an installation package file.

**Examples**

```
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**

The package information is displayed after running.

**Messages**

```
Name      : bridge
Version:1.0.1.23cd34aa
Package type      : common component
Support target    : egl000m
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
```

## 15.5 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** The following example displays the upgrade history.

**Examples**

```
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**

N/A

**Messages**

**Platforms**

N/A

## 15.6 show upgrade status

Use this command to display 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** The following example displays the upgrade status of all line cards on the chassis device.

**Examples**

```
Ruijie#show upgrade status
[slot: M1]
    dev_type: s12k-ppc-cm
    status  : ready
[slot: 8]
    dev_type: s12k-s86-ppc-lc
    status  : upgrading
```

**Prompt**

The upgrade status of various line cards is displayed.

**Messages**

```
[slot: M1]
    dev_type: s12k-ppc-cm
    status  : ready
[slot: 8]
    dev_type: s12k-s86-ppc-lc
```

```
status : upgrading
```

## Platforms

# 15.7 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
<i>url</i>	The local path indicates where an installation package is stored. This command is used to upgrade an installation package on the device.
<b>slot</b> <i>num</i>	This parameter is used on a chassis device. It indicates a corresponding line card based on the slot number.
<b>slot</b> <b>all</b>	This parameter is used on a chassis device. It indicates all devices including VSU system.
<b>slot</b> <b>M1</b>	This parameter is used on a chassis device. It specifies that the operation is performed on supervisor module M1.
<b>slot</b> <b>M2</b>	This parameter is used on a chassis device. It specifies that the operation is performed on supervisor module M2.
<b>force</b>	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. 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 chassis package on the device.

```
Ruijie# upgrade usb0:/ S8600E_RGOS11.0(4)B1_CM_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

**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

## 15.8 upgrade auto-sync package

Use this command to configure the path for the auto-sync upgrade.

**upgrade auto-sync package** *url*

Parameter Description	Parameter	Description
	<i>url</i>	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** The following example sets the path to the upgrade package in the USB flash disk.

**Examples** 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

## 15.9 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
	<b>none</b>	No auto-sync upgrade
	<b>compatible</b>	Performs auto-synchronization based on the sequential order of versions.
	<b>coordinate</b>	Synchronizes with the version based on the system upgrade patch stored on the supervisor module.
Defaults	<b>coordinate</b>	
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. <pre>Ruijie# upgrade auto-sync policy coordinate</pre>	
Verification	Display the current policy for auto-sync upgrade by running the <b>show upgrade auto-sync</b> command.	
Prompt Messages	The prompt message of successful running is displayed. <pre>Upgrade auto-sync policy is set as coordinate.</pre>	

## 15.10 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
	<b>chassis</b>	Auto-sync version upgrade in the range of chassis
	<b>vsu</b>	Auto-sync version upgrade in the range of the VSU system.



<b>Defaults</b>	<b>vsu</b>
<b>Command Mode</b>	Privileged EXEC mode
<b>Default Level</b>	2
<b>Usage Guide</b>	It is recommended to set the parameter to vsu to ensure system version consistency to the most extent.
<b>Configuration Examples</b>	The following example installs the auto-sync upgrade in the VSU system. <pre>Ruijie# upgrade auto-sync range vsu</pre>
<b>Verification</b>	Run the <b>show upgrade auto-sync</b> command to display the range of current auto-sync upgrade.
<b>Prompt Messages</b>	The prompt message of successful running is displayed. <pre>Upgrade auto-sync range is set as vsu.</pre>

## 15.11 upgrade download tftp

Use this command to download, install and upgrade installation packages from the tftp server.

**upgrade download tftp:***path*

Parameter Description	Parameter	Description
	<i>path</i>	The path of installation packages on the tftp server This command is downloaded and upgraded automatically from the server.

<b>Command Mode</b>	Privileged EXEC mode
<b>Default Level</b>	2
<b>Usage Guide</b>	This command is applicable to installation packages of all subsystem components, chassis devices, feature components. This command is used to perform automatic installation, copy and upgrade of files.
<b>Configuration Examples</b>	N/A
<b>Verification</b>	Run the <b>show version detail</b> 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.

**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
```

## 15.12 upgrade rollback

Use this command to roll a subsystem back to the version before the upgrade.

**upgrade rollback [ slot {num | M1 | M2 | all } ]**

**Parameter  
Description**


Parameter	Description
<b>slot num</b>	This parameter is used on a chassis device. It indicates a corresponding line card based on the slot number.
<b>slot all</b>	This parameter is used on a chassis device. It indicates all devices.
<b>slot M1</b>	This parameter is used on a chassis device. It specifies that the operation is performed on supervisor module M1.
<b>slot M2</b>	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 when the device cannot work properly after subsystem upgrade. It takes effect only when the last upgrade of subsystem components is successful.

-  The command is valid after device restart. The recursive rollback cannot be executed through this command in succession.

**Configuration****Examples**

The following example rolls a subsystem back to the version before the upgrade on the chassis device.

```
Ruijie#upgrade rollback slot M1
[Slot M1]:
kernel rollback version[2.6.32.9f8b56f->2.6.32.91f9d21] [OK]
rootfs rollback version[1.0.0.1bcc12e8->1.0.0.2ad02537] [OK]
Rollback success!
Reload system to take effect!
```

**Verification**

Run the **show version detail** command to check the result of rolling back subsystem components after device restart.

**Prompt**

The prompt message of successful running is displayed.

**Messages**

```
Rollback success!
Restart to take effect !
```

The rollback operation cannot be performed when subsystem components have not been upgraded last time.

```
Not subsys package last upgrade
```

The rollback operation cannot be performed for the last upgrade is not successful.

```
Last upgrade err or skip
```

The upgrade command has not been run or the rollback operation has been performed.

```
Monitor file lost
```

**Common Errors**

The last upgrade is not for subsystem components, but for feature packages and so on.  
Run the rollback command for subsystem once.

## 16 OpenFlow Commands

### 16.1 of controller-ip

Use this command to enable OpenFlow.

**of controller-ip** *ip-address* [ **port** *port-id* ] [ **aux** ] **interface** [ *interface-id* ]

Use the **no** form of this command to disable OpenFlow.

**no of controller-ip** [ *ip-address* ]

#### Parameter Description

Parameter	Description
<i>ip-address</i>	Controller IP address. If you configure the <b>no</b> form of this command without any parameter, all controllers are disabled. (OpenFlow1.3 supports connection to three controllers).
<b>port</b> <i>port-id</i>	Controller access port ID. The default for OpenFlow1.3 is 6653.
<b>aux</b>	Only active in OpenFlow 1.3
<b>Interface</b> <i>interface-id</i>	Interface ID, whether out-of-band MGMT interface or in-band physical port (some devices may not have MGMT interfaces).

**Command Mode** Global configuration mode

**Default** OpenFlow is disabled by default.

**Usage Guide** N/A

**Configuration Examples** The following example enables OpenFlow.

```
Ruijie(config)#of controller-ip 192.168.21.57 interface gigabitEthernet 0/1
```

The following example disables OpenFlow.

```
Ruijie#no of controller-ip
```

### 16.2 show of

Use this command to display the connection between the current device and the controller.

**show of**

#### Parameter Description

Parameter	Description
N/A	N/A

**Command Mode** Global configuration mode

**Default** N/A

**Usage Guide** Use this command to display the OpenFlow version on the device.

**Configuration** The following example displays the connection between the current device and the controller.

**Examples**

```
Ruijie(config)#show of
version:openflow1.3, controller[0]:tcp:172.18.2.35 port6653 interface
GigabitEthernet1/0/7, main is connected, aux is disable, role is master.
```

## 16.3 show of flowtable

Use this command to display flow table entries of OpenFlow Device

### show of flowtable

**Parameter Description**

Parameter	Description
N/A	N/A

**Command Mode** Global configuration mode

**Default** N/A

**Usage Guide** Running the **of controller-ip** command before configuring this command. Otherwise, the flow table entries are not displayed.

**Configuration** The following example display flow table entries.

**Examples**

```
Ruijie#show of flowtable
```

## 16.4 show of port

Use this command to display port information of OpenFlow device.

### show of port

**Parameter Description**

Parameter	Description
N/A	N/A

**Command Mode** Global configuration mode

**Default** N/A

**Usage Guide** Running the **of controller-ip** command before configuring this command. Otherwise, the port information is not displayed.

**Configuration** The following example displays port information of OpenFlow device.

**Examples**

```
Ruijie#show of port
```

ID	IFX	INTERFACE	SPEED	LINK	DUPLEX	TX_PKT	
RX_PKT		CONFIG					
1	1	GigabitEthernet 0/1	Unknown	DOWN	Unknown	0	0
NA							
2	2	GigabitEthernet 0/2	Unknown	DOWN	Unknown	0	0
NA							
3	3	GigabitEthernet 0/3	Unknown	DOWN	Unknown	0	0
NA							
4	4	GigabitEthernet 0/4	Unknown	DOWN	Unknown	0	0
NA							
5	5	GigabitEthernet 0/5	Unknown	DOWN	Unknown	0	0
NA							
6	6	GigabitEthernet 0/6	Unknown	DOWN	Unknown	0	0
NA							
7	7	GigabitEthernet 0/7	Unknown	DOWN	Unknown	0	0
NA							
8	8	GigabitEthernet 0/8	Unknown	DOWN	Unknown	0	0
NA							
9	9	GigabitEthernet 0/9	Unknown	DOWN	Unknown	0	0
NA							
10	10	GigabitEthernet 0/10	Unknown	DOWN	Unknown	0	0
NA							
11	11	GigabitEthernet 0/11	Unknown	DOWN	Unknown	0	0
NA							
12	12	GigabitEthernet 0/12	Unknown	DOWN	Unknown	0	0
NA							
13	13	GigabitEthernet 0/13	Unknown	DOWN	Unknown	0	0
NA							
14	14	GigabitEthernet 0/14	Unknown	DOWN	Unknown	0	0
NA							
15	15	GigabitEthernet 0/15	Unknown	DOWN	Unknown	0	0
NA							
16	16	GigabitEthernet 0/16	Unknown	DOWN	Unknown	0	0
NA							

## 16.5 show of group

Use this command to display group information of OpenFlow device.

**show of group**

Parameter Description	show of group	
	Parameter	Description
	N/A	N/A
Command Mode	Global configuration mode	
Default	N/A	
Usage Guide	This command takes effect only for OpenFlow1.3.	
Configuration	The following example displays group information of OpenFlow device.	
Examples	<pre>Ruijie(config)#show of group</pre>	

## 16.6 show of mergedflow

Use this command to display merged entries of OpenFlow device.

**show of mergeflow**

Parameter Description	show of mergeflow	
	Parameter	Description
	N/A	N/A
Command Mode	Global configuration mode	
Default	N/A	
Usage Guide	This command takes effect only for OpenFlow1.3. See the <b>show of flowtable</b> command for parameter description.	
Configuration	The following example displays merged entries of OpenFlow device.	
Examples	<pre>Ruijie(config)#show of mergedflow</pre>	

## 16.7 show of meter

Use this command to display meter information of OpenFlow device.

**show of meter**

Parameter Description	show of meter	
	Parameter	Description
	N/A	N/A
Command Mode	Global configuration mode	
Default	N/A	

**Usage Guide** This command takes effect only for OpenFlow1.3.

**Configuration** The following example displays meter information of OpenFlow device.

**Examples** Ruijie(config)#show of meter

```
Ruijie(config)#show of meter
```





## Ethernet Switch Commands

---

1. Interface Commands
2. MAC Address Commands
3. Aggregate Port Commands
4. VLAN Commands
5. Protocol Commands
6. MSTP Commands
7. GVRP Commands
8. LLDP Commands
9. QinQ Commands
10. Management Ethernet Interface Commands
11. HASH Simulator 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
<i>kilobits</i>	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
	<i>interface-id</i>	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
	<b>show interfaces</b>	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
	<i>interface-id</i>	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** The following example resets the interface gigabitethernet 1/1.

**Examples** Ruijie# clear interface gigabitethernet 1/1

**Related  
Commands**

Command	Description
<b>shutdown</b>	Disables the interface.

**Platform** N/A

**Description**

## 1.5 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
<i>string</i>	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** The following example configures the alias of interface.

**Examples** Ruijie(config)# interface gigabitethernet 1/1  
Ruijie(config-if)# description GBIC-1

**Related  
Commands**

Command	Description
<b>show interfaces</b>	Displays the interface information.

**Platform** N/A

**Description**

## 1.6 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
<b>auto</b>	Self-adaptive full duplex and half duplex
<b>full</b>	Full duplex
<b>half</b>	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
<b>show interfaces</b>	Displays the interface information.

### Platform

N/A

### Description

## 1.7 errdisable recovery

Use this command to recover the interface in violation.

**errdisable recovery** [ **interval** *time* ]

### Parameter Description

Parameter	Description
<i>time</i>	Time for the command to take effect. The range is from 30 to 86,400 seconds.

### Defaults

N/A

**Command** Interface configuration mode.

**Mode**

**Usage Guide** Use the command to recover the port that triggers violation after being configured with the **violation shutdown** command.

**Configuration Examples** The following example recovers the violation interface gigabitethernet 1/1.

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# errdisable recovery
```

**Related Commands**

Command	Description
<b>switchport port-security violation shutdown</b>	Configures the port security violation to shutdown.

**Platform** N/A.

**Description**

## 1.8 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
<b>on</b>	Enables auto-negotiation.
<b>off</b>	Disables auto-negotiation.

**Defaults** This function is disabled by default.

**Command** Interface configuration mode

**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**

Command	Description
---------	-------------

<b>Commands</b>		
	N/A	N/A

**Platform** N/A

**Description**

## 1.9 interface

Use this command to enter the interface configuration mode.

**interface** *interface-type interface-number*

<b>Parameter Description</b>	Parameter	Description
	<i>interface-type</i>	The interface type.
	<i>interface-number</i>	The interface ID.

**Defaults** N/A

**Command  
Mode** Interface configuration mode

**Usage Guide** This command is used to enter interface configuration mode. The user can modify the interface configuration next,

**Configuration** The following example enters configuration mode on Aggregateport 1.

**Examples**

```
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)#
```

<b>Related Commands</b>	Command	Description
	N/A	N/A

**Platform** N/A

**Description**



## 1.10 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
<i>port-range</i>	The interface type and ID range, entered in the form of <i>interface-type slot-number/interface-number</i> . The interface can be either an Ethernet physical interface or a loopback interface.
<b>macro</b> <i>macro_name</i>	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 routel gigabitEthernet 0/0-2
Ruijie(config)# interface range macro routel
Ruijie(config-if-range)# bandwidth 100
```

### Related Commands

Command	Description
N/A	N/A

**Platform Description** N/A

## 1.11 line-detect

Use this command to detect the cable connection status.

**line-detect**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** Interface configuration mode.

**Usage Guide** This command is used to detect the line status and locate the problem in case of a line failure, for example, the line is torn down.

**Configuration Examples** The following example detects the cable connection status on gigabitEthernet 0/1.

```
Ruijie(config)#interface gigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)#line-detect
```

```
Interface : GigabitEthernet 0/1
start cable-diagnoses,please wait...
cable-daignoses end!this is result:
4 pairs
pair state      length(meters)
-----
A   Ok          1
pair state      length(meters)
-----
B   Ok          2
pair state      length(meters)
-----
C   Short       1
pair state      length(meters)
-----
D   Short       1
```

Field	Description
pairs	Number of line pairs included. For example, the twisted pair includes four pairs of lines.
state	Status of the current line pair: OK, Short or Open. In general, the 100M twisted pairs A and B are OK, C and D are Short. The 1000M twisted pairs A, B, C and D are all OK.

length	Length of the line in meter. Only the length of the line pair whose status is OK takes effect. Since the length is calculated based on the transmission time of signal, there may have a certain difference. The length of the line pair whose status is Short or Open is the length from the port to the faulty point.
--------	---

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

## 1.12 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
<i>seconds</i>	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** N/A

**Description**

## 1.13 logging

Use this command to print information on the interface. Use the **no** form of this command to disable this function.

**logging** [ **link-updown** | **error-frame** | **link-dither** ]

**no logging** [ **link-updown** | **error-frame** | **link-dither** ]

**Parameter  
Description**

Parameter	Description
<b>link-updown</b>	Prints the status change information.
<b>error-frame</b>	Prints the error frame information.
<b>link-dither</b>	Prints the oscillation information.

**Defaults** This function is enabled by default.

**Command  
Mode** Global configuration mode

**Usage Guide** N/A

**Configuration** The following example prints information on the interface..

**Examples**

```
Ruijie(config)# logging link-updown
Ruijie(config)# logging error-frame
Ruijie(config)# logging link-dither
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 1.14 medium-type

Use this command to specify the medium type for an interface. Use the **no** form of this command to restore the default setting.

**medium-type** { **auto-select** [ **prefer** [ **fiber** | **copper** ] ] | **fiber** | **copper** }

**no medium-type**

Parameter Description	Parameter	Description
	<b>fiber</b>	Optical interface.
	<b>prefer [ fiber   copper ]</b>	The preferred medium type for the interface is selected.
	<b>auto-select</b>	Auto-selects the medium type for the interface.
	<b>copper</b>	Copper interface.

**Defaults** The default is **copper**.

**Command Mode** Interface configuration (physical interface, except for AP and SVI)

**Usage Guide** If a port can be selected as an optical port or electrical port, you can only select one of them. Once the media type is selected, the attributes of the port, for example, status, duplex, flow control, and rate, all mean those of the currently selected media type. After the port type is changed, the attributes of the new port type take the default values, which can be modified as needed.

**Configuration Examples** The following example specifies the medium type for interface gigabitethernet 1/1.

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# medium-type copeer
```

Related Commands	Command	Description
	<b>show interfaces</b>	Displays the interface information.

**Platform Description** The 12 SFP interfaces of the 24SFP/12GT line cards and 1210/100/1000M BASE-T interfaces allow for dynamic switching.

The combo interface is not supported to automatically determine whether the current port is the SFP interface or the 10/100/1000M BASE-T interface.

## 1.15 mtu

Use this command to set the MTU supported on the interface.

**mtu** *num*

Parameter Description	Parameter	Description
	<i>num</i>	64 to 9216 (or 65536, which varies by products)

**Defaults** The default is 1500.

**Command** Interface configuration mode.

**Mode**

**Usage Guide** This command is used to set the maximum transmission unit (MTU) supported on the interface.

**Configuration** The following example sets the MTU supported on interface `gigabitethernet 1/1` to 9000.

**Examples**

```
Ruijie(config)# interface GigabitEthernet 1/1
Ruijie(config-if-GigabitEthernet)# mtu 9000
```

**Related  
Commands**

Command	Description
show interfaces	Displays the interface information.

**Platform** N/A

**Description**

## 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
<b>on</b>	Enables auto-negotiation.
<b>off</b>	Disables auto-negotiation.

**Defaults** This function is disabled by default.

**Command** Interface configuration mode

**Mode**

**Usage Guide** In general, the auto-negotiation status is determined by interface speed, duplex, flow control and auto-negotiation factor mode.

**Configuration** The following example enables auto-negotiation mode on interface `GigabitEthernet 1/1`.

**Examples**

```
Ruijie(config)# interface GigabitEthernet 1/1
Ruijie(config-if-GigabitEthernet 1/1)# negotiation mode on
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A  
**Description**

## 1.17 physical-port dither protect

Use this command to enable oscillation protection on the port. Use the **no** form of this command to disable this function.

**physical-port dither protect**


**no 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

**Platform** N/A  
**Description**

## 1.18 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** By default, the administrative status of an interface is Up.

**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** The following example disables an interface.

**Examples**

```
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
	<b>clear interface</b>	Resets the hardware.
	<b>show interfaces</b>	Displays the interface information.

**Platform** N/A

**Description**

## 1.19 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** Interface configuration mode.

**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** The following example disables the interface from sending LinkTrap on the interface.

**Examples**

```
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
<b>snmp trap link-status</b>	Enables the interface to send LinkTrap on the interface.
<b>no snmp trap link-status</b>	Disables the interface from sending LinkTrap on the interface.

**Platform** N/A

**Description**

## 1.20 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** Global configuration mode.

**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** The following example configures L3 routing between the protected ports.

**Examples** Ruijie(config)# protected-ports route-deny

**Related  
Commands**

Command	Description
show running-config	Displays the protected ports route-deny configuration.

**Platform** N/A

**Description**

## 1.21 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** N/A

**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** N/A

**Description**

## 1.22 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

N/A

### Description

## 1.23 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
<b>10</b>	The transmission rate of the interface is 10Mbps.
<b>100</b>	The transmission rate of the interface is 100Mbps.
<b>1000</b>	The transmission rate of the interface is 1000Mbps.
<b>10G</b>	The transmission rate of the interface is 10Gbps.
<b>40G</b>	The transmission rate of the interface is 40Gbps.
<b>100G</b>	The transmission rate of the interface is 100Gbps.
<b>auto</b>	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** The following example sets the speed on interface gigabitethernet 1/1 to 100Mbps.

**Examples**

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# speed 100
```

**Related Commands**

Command	Description
<b>show interfaces</b>	Displays the interface information.

**Platform Description** N/A

## 1.24 split interface

Use this command to split a 40G interface into four 10G interfaces. Use the **no** form of this command to restore the default setting.

**split interface FortyGigabitEthernet** *interface-number*

**no split interface FortyGigabitEthernet** *interface-number*

**Parameter Description**

Parameter	Description
<i>interface-number</i>	Specifies the interface number.

**Defaults** By default, the interface is in the combination mode.

**Command Mode** Global configuration mode.

**Usage Guide** N/A

**Configuration** The following example splits the 40G interface 0/65 into four 10G interfaces.

**Examples**

```
Ruijie(config-if)# split interface forty-giga 0/65
```

Related Commands	Command	Description
	<b>show interfaces</b>	Displays the interface information.

**Platform** N/A  
**Description**

## 1.25 switchport

Use this command to configure a Layer 3 interface. Use the **no** form of this command to restore the default setting.

**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
	<b>show interfaces</b>	Displays the interface information.

**Platform** N/A  
**Description**

## 1.26 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
<i>vlan-id</i>	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
<b>switchport mode</b>	Configures the interface as Layer 2 mode (switch port mode).
<b>switchport trunk</b>	Configures a native VLAN and the allowed-VLAN list for the trunkport.

**Platform  
Description**

N/A

## 1.27 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
<b>access</b>	Configures the switch port as an access port.

<b>trunk</b>	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 Examples** The following example specifies a L2 interface (switch port) mode.

```
Ruijie(config-if)# switchport mode trunk
```

**Related Commands**

Command	Description
<b>switchport access</b>	Configures an interface as a statics access port and assigns it to a VLAN.
<b>switchport trunk</b>	Configures a native VLAN and the allowed-VLAN list for the trunk port.

**Platform Description** N/A

## 1.28 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** The following example configures interface `gigabitethernet 1/1` as a protected port.

**Examples**

```
Ruijie(config)#interface gigabitethernet 1/1
Ruijie(config-if)# switchport protected
```

**Related  
Commands**

Command	Description
<b>show interfaces</b>	Displays the interface information.

**Platform** N/A  
**Description**

## 1.29 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
<b>allowed vlan</b> <i>vlan-list</i>	Configures the list of VLANs allowed on the trunk port. <i>vlan-list</i> 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;
<b>native vlan</b> <i>vlan-id</i>	Configures the native VLAN.

**Defaults** The allowed VLAN list is all, the Native VLAN is VLAN1.

**Command** Interface configuration mode.



**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**

The following example removes port 1/15 from VLAN 2.

**Examples**

```
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
<b>show interfaces</b>	Displays the interface information.
<b>switchport access</b>	Configures an interface as a statics access port and assigns it to a VLAN.

**Platform**

N/A

**Description**

## 1.30 show interfaces

Use this command to display the interface information and optical module information.

**show interfaces** [ *interface-type interface-number* ] [ **description** | **switchport** ]

**Parameter  
Description**

Parameter	Description
<i>interface-id</i> <i>interface-number</i>	Interface (including Ethernet interface, aggregate port, SVI or loopback interface).

<b>description</b>	The description of the interface, including the link status.
<b>switchport</b>	Layer 2 interface information.

**Defaults** All interface information is displayed by default.

**Command** Privileged EXEC mode.

**Mode**

**Usage Guide** This command is used to show all basic information if no parameter is specified.

**Configuration** The following example displays the interface information when the Gi0/1 is a Trunk port.

**Examples**

```
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

```

#### Related Commands

Command	Description
<b>duplex</b>	Duplex
<b>flowcontrol</b>	Flow control status.

<b>interface gigabitEthernet</b>	Selects the interface and enter the interface configuration mode.
<b>interface aggregateport</b>	Creates or accesses the aggregate port, and enters the interface configuration mode.
<b>interface vlan</b>	Creates or accesses the switch virtual interface (SVI), and enters the interface configuration mode.
<b>shutdown</b>	Disables the interface.
<b>speed</b>	Configures the speed on the port.
<b>switchport priority</b>	Configures the default 802.1q interface priority.
<b>switchport protected</b>	Configures the interface as a protected port.

**Platform** N/A

**Description**

## 1.31 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** ]

**Parameter Description**

Parameter	Description
<i>interface-type</i> <i>interface-number</i>	(Optional) The interface type and ID.
<b>increment</b>	Displays the packet statistics increased during the last sample interval.
<b>error</b>	Displays error packet statistics.
<b>rate</b>	Displays packet receiving and transmitting rate.
<b>summary</b>	Displays packet statistics summary.

**Defaults** N/A

**Command Mode** Any CLI mode

**Usage Guide** If you do not specify an interface, the packet statistics on all interfaces are displayed.

**Configuration** The following example displays packet statistics on interface GigabitEthernet 0/1.

**Examples**

```
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

```



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
```



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				

-  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

-  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.

#### Related Commands

Command	Description
N/A	N/A

#### Platform Description

N/A

## 1.32 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
<i>interface-type</i>	The interface type and ID.
<i>interface-number</i>	



**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** The following example displays the link state statistics of interface GigabitEthernet 0/1.

```
Ruijie# show interfaces GigabitEthernet 0/1 link-state-change statistics
Interface      Link state      Link state change times      Last change time
-----
Gi 0/1         down           100                          2012-12-24 15:00:00
```

Interface	Description
Link state	Current link state.
Link state change times	The count of link state change.
Last change time	The time when the last link state change occurs.

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

## 1.33 show interfaces status

Use this command to display interface status information.

**show interfaces** [ *interface-type interface-number* ] **status**

**Parameter Description**

Parameter	Description
<i>interface-type</i> <i>interface-number</i>	The interface type and ID.
<b>status</b>	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** The following example displays the status information of interface GigabitEthernet 0/1.

**Examples**

```
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** N/A

**Description**

## 1.34 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
<i>interface-type</i>	(Optional) The interface type and ID.
<i>interface-number</i>	

**Defaults**

**Command** Any CLI mode

**Mode**


**Usage Guide** If you do not specify an interface, violation status of all interfaces is displayed.

**Configuration** The following example displays the violation status of interface GigabitEthernet 0/1.

**Examples**

```
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** N/A

**Description**

## 1.35 show interfaces transceiver

Use this command to display transceiver information of the interface.

**show interfaces** [ *interface-type interface-number* ] **transceiver** [ **alarm** | **diagnosis** ]

**Parameter  
Description**

Parameter	Description
<i>interface-type</i> <i>interface-number</i>	The interface type and ID.
<b>transceiver</b>	Displays the transceiver information.
<b>alarm</b>	Displays the alarm message of the transceiver. If there is no alarm message, it is displayed as None.
<b>diagnosis</b>	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** The following example displays the transceiver information of interface GigabitEthernet 5/4.

**Examples**

```
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

## 1.36 show interfaces usage

Use this command to display bandwidth usage of the interface.

**show interfaces** [ *interface-type interface-number* ] **usage**

#### Parameter Description

Parameter	Description
<i>interface-type</i> <i>interface-number</i>	(Optional) The interface type and ID.

#### Defaults

N/A

#### Command Mode

Any CLI mode

#### 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   Output Usage
Input Usage
-----
GigabitEthernet 0/0   1000 Mbit    0.002822759%    0.001183280%
0.004462237%

```

 Bandwidth refers to the interface link bandwidth, the maximum speed of link. Average Usage refers to the current usage.

#### Related Commands

Command	Description
---------	-------------

N/A	N/A
-----	-----

**Platform** N/A

**Description**

## 1.37 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.

## 2 MAC Address Commands

### 2.1 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 ] |  
{ [ interface interface-id ] [ vlan vlan-id ] } ]
```

Parameter	Parameter	Description
Description	<b>dynamic</b>	Clears all the dynamic MAC addresses.
	<b>address</b> <i>mac-addr</i>	Clears the specified dynamic MAC address.
	<b>interface</b> <i>interface-id</i>	Clears all the dynamic MAC addresses of the specified interface.
	<b>vlan</b> <i>vlan-id</i>	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** The following command clears all the dynamic MAC addresses.

**Examples** Ruijie# clear mac-address-table dynamic

Related Commands	Command	Description
	<b>show mac-address-table dynamic</b>	Displays dynamic MAC address.

**Platform** N/A

**Description**

### 2.2 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
	<b>enable</b>	Enables MAC address learning globally.
	<b>disable</b>	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

## 2.3 mac-address-learning

Use this command to enable the port address learning. Use the **no** or **default** form of this command to restore the default setting.

**mac-address-learning**

**no mac-address-learning**

**default 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.

**Configuration Examples** The following example disables the port address learning function.

```
Ruijie(config-if)# no mac-address-learning
```

Related	Command	Description
Commands	N/A	N/A

Platform N/A  
Description

## 2.4 mac-address-table aging-time

Use this command to specify the aging time of the dynamic MAC address. Use the **no** or **default** form of the command to restore the default setting.

**mac-address-table aging-time** *seconds*

**no mac-address-table aging-time**

**default mac-address-table aging-time**

Parameter	Parameter	Description
Description	<i>seconds</i>	Aging time of the dynamic MAC address (in seconds). The time range depends on the switch.

Defaults The default is 300.

Command Global configuration mode.  
Mode

Usage Guide Use **show mac-address-table aging-time** to display configuration.

Configuration The following example sets the aging time of the dynamic MAC address to 500 seconds.

Examples 

```
Ruijie(config)# mac-address-table aging-time 500
```

Related	Command	Description
Commands	<b>show mac-address-table aging-time</b>	Displays the aging time of the dynamic MAC address.
	<b>show mac-address-table dynamic</b>	Displays dynamic MAC address.

Platform N/A  
Description

## 2.5 mac-address-table filtering

Use this command to configure the filtering MAC address. Use the **no** or **default** 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*

**default mac-address-table filtering** *mac-address* **vlan** *vlan-id*



Parameter	Parameter	Description
Description	<i>mac-address</i>	Filtering Address
	<i>vlan-id</i>	VLAN ID, in the range from 1 to 4094.
Defaults	No filtering address is configured by default.	
Command Mode	Global configuration mode.	
Usage Guide	The filtering MAC address shall not be a multicast address.	
Configuration Examples	The following example configures the filtering MAC address for VLAN 1.	
	<pre>Ruijie(config)#mac-address-table filtering 0000.0202.0303 vlan 3</pre>	
Related Commands	Command	Description
	<b>clear mac-address-table filtering</b>	Clears the filtering MAC address.
Platform	N/A	
Description		

## 2.6 mac-address-table notification

Use this command to enable the MAC address notification function. Use The **no** or **default** 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** ]

**default mac-address-table notification** [ *interval* | **history-size** ]

Parameter	Parameter	Description
Description	<b>interval</b> <i>value</i>	Sets the interval of sending the MAC address trap message, 1 second by default.
	<b>history-size</b> <i>value</i>	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 Mode	Global configuration 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** The following example enables the MAC address notification function.

**Examples**

```
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
<b>snmp-server enable traps</b>	Sets the method of handling the MAC address trap message..
<b>show mac-address-table notification</b>	Displays the MAC address notification configuration and the MAC address trap notification table.
<b>snmp trap mac-notification</b>	Enables the MAC address trap notification function on the specified interface.

**Platform** N/A

**Description**

## 2.7 mac-address-table static

Use this command to configure a static MAC address. Use the **no** or **default** 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*

**default mac-address-table static** *mac-addr* **vlan** *vlan-id* **interface** *interface-id*

**Parameter**

**Description**

Parameter	Description
<i>mac-addr</i>	Destination MAC address of the specified entry
<i>vlan-id</i>	VLAN ID of the specified entry, in the range from 1 to 4094.
<i>interface-id</i>	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** N/A

**Examples**

Related	Command	Description
Commands	<b>show mac-address-table static</b>	Displays the static MAC address.

Platform N/A  
Description

## 2.8 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	Parameter	Description
Description	<i>num</i>	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. MAC address learning is disabled on the VLAN or interface.

Use the **show mac-address-table max-dynamic-mac-count** command to display the maximum number of MAC addresses learned dynamically on the VLAN or interface.

**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 N/A  
Description

## 2.9 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 N/A  
Description

## 2.10 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 *priority-num* ]**

**no mac-address-table flapping action [error-down | priority]**

**default mac-address-table flapping action [error-down | priority]**

Parameter	Parameter	Description
Description	<b>error-down</b>	Indicates port shutdown upon MAC-flapping
	<b>priority</b> <i>priority-num</i>	Indicates the <b>error-down</b> 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.

**Configuration** The following example enables MAC-flapping logging.

**Examples**

```
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
	N/A	N/A

**Platform Description** N/A

## 2.11 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 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*

Parameter Description	Parameter	Description
	<i>forward</i>	Forwards the packets if the dynamic MAC address learned on the VLAN or interface exceeds the limit.
	<i>discard</i>	Discards the packets if the dynamic MAC address learned on the VLAN or interface exceeds the limit.

**Command** VLAN configuration mode / Interface configuration mode  
**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.

```
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
```

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 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

## 2.12 show mac-address-learning

Use this command to display the MAC address learning.

**show mac-address-learning**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode.

**Usage Guide** N/A

**Configuration** The following example displays the MAC address learning.

**Examples**

```
Ruijie# 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	Command	Description
Commands	N/A	N/A

**Platform** N/A

**Description**

## 2.13 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	Parameter	Description
Description	<b>address</b> <i>mac-addr</i>	The MAC address.
	<b>interface</b> <i>interface-id</i>	The Interface ID.
	<b>vlan</b> <i>vlan-id</i>	The VLAN ID, in the range from 1 to 4094.

**Defaults** N/A

**Command Mode** All modes

**Usage Guide** N/A

**Configuration** The following example displays the MAC address.

**Examples**

```
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** N/A  
**Description**

## 2.14 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	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 the aging time of the dynamic MAC address.

```
Ruijie# show mac-address-table aging-time
Aging time : 300
```

Related Commands	Command	Description
	<b>mac-address-table aging-time</b>	Sets the aging time of the dynamic MAC address.

**Platform** N/A  
**Description**

## 2.15 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	Parameter	Description
Description	<b>interface</b> <i>interface-id</i>	Interface ID
	<b>vlan</b> <i>vlan-id</i>	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** The following example displays the number of MAC address entries.

**Examples**

```
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: 8139
```

The 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
```

**Related Commands**

Command	Description
<b>show mac-address-table static</b>	Displays the static address.
<b>show mac-address-table filtering</b>	Displays the filtering address.
<b>show mac-address-table dynamic</b>	Displays the dynamic address.
<b>show mac-address-table address</b>	Displays all the address information of the specified address.

<b>show mac-address-table interface</b>	Displays all the address information of the specified interface.
<b>show mac-address-table vlan</b>	Displays all the address information of the specified vlan.

**Platform** N/A

**Description**

## 2.16 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	Parameter	Description
<b>Description</b>	<i>mac-addr</i>	Destination MAC address of the entry
	<i>vlan-id</i>	VLAN of the entry, in the range from 1 to 4094.
	<i>interface-id</i>	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** The following example displays the dynamic MAC address.

**Examples**

```
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
	<b>clear mac-address-table dynamic</b>	Clears the dynamic MAC address.

**Platform** N/A

**Description**

## 2.17 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	Parameter	Description
Description	<i>mac-addr</i>	Destination MAC address of the entry
	<i>vlan-id</i>	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** The following example displays the filtering MAC address.

### Examples

```
Ruijie# show mac-address-table filtering
```

```
Vlan    MAC Address    Type    Interface
```

```
-----
1       0000.2222.2222  FILTER Not available
```

Related	Command	Description
Commands	<b>mac-address-table filtering</b>	Configures the filtering MAC address.

**Platform** N/A

**Description**

## 2.18 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	Parameter	Description
Description	<b>vlan</b>	Displays the dynamic MAC address learned on all VLANs which are configured with the maximum number of dynamic MAC address learning.
	<i>vlan-id</i>	Displays the dynamic MAC address learned on the specified VLAN.
	<b>interface</b>	Displays the dynamic MAC address learned on all interfaces which are configured with the maximum number of dynamic MAC address learning.

<i>interface-id</i>	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** N/A  
**Description**

## 2.19 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
	<i>interface-id</i>	Displays the MAC address information of the specified Interface (physical interface or aggregate port).
	<i>vlan-id</i>	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** The following example displays all the MAC addresses on interface gigabitethernet 1/1.

### Examples

```
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
	<b>show mac-address-table static</b>	Displays the static MAC address.
	<b>show mac-address-table filtering</b>	Displays the filtering MAC address.
	<b>show mac-address-table dynamic</b>	Displays the dynamic MAC address.
	<b>show mac-address-table address</b>	Displays all types of MAC addresses.

<b>show mac-address-table vlan</b>	Displays all types of MAC addresses of the specified VLAN.
<b>show mac-address-table count</b>	Displays the address counts in the MAC address table.

**Platform** N/A

**Description**

## 2.20 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	Parameter	Description
<b>Description</b>	<b>interface</b>	Displays the MAC address notification configuration on all interfaces.
	<b>interface</b> <i>interface-id</i>	Displays the MAC address notification configuration on a specific interface.
	<b>history</b>	Displays the MAC address notification history.

**Defaults** The MAC address notification configuration is displayed by default.

**Command** Privileged EXEC mode.

**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	Command	Description
<b>Commands</b>	<b>mac-address-table notification</b>	Enables MAC address notification.

<b>snmp trap mac-notification</b>	Enables the MAC address trap notification function on the specified interface.
-----------------------------------	--

**Platform** N/A

**Description**

## 2.21 show mac-address-table static

Use this command to display the static MAC address.

**show mac-address-table static** [**addr** *mac-addr* *r*] [**interface** *interface-id*] [**vlan** *vlan-id*]

Parameter	Parameter	Description
<b>Description</b>	<i>mac-addr</i>	Destination MAC address of the entry
	<i>vlan-id</i>	VLAN ID of the entry, within the range from 1 to 4094.
	<i>interface-id</i>	Interface of the entry physical interface or aggregate port

**Defaults** N/A

**Command Mode** Privileged EXEC mode.

**Usage Guide** N/A

**Configuration** The following example displays the static MAC addresses

**Examples**

```
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
	<b>mac-address-table static</b>	Configures the static MAC address.

**Platform** N/A

**Description**

## 2.22 show mac-address-table vlan

Use this command to display all addresses of the specified VLAN.

**show mac-address-table vlan** [*vlan-id*]

Parameter	Parameter	Description
-----------	-----------	-------------

<b>Description</b>	<i>vlan-id</i>	VLAN ID of the entry, within the range from 1 to 4094.
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Privileged EXEC mode	
<b>Usage Guide</b>	N/A	

**Configuration** The following example displays all addresses of the specified VLAN.

**Examples**

```
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
<b>show mac-address-table static</b>	Displays static addresses.
<b>show mac-address-table filtering</b>	Displays filtered addresses.
<b>show mac-address-table dynamic</b>	Displays dynamic addresses.
<b>show mac-address-table address</b>	Displays all address information about the specified address.
<b>show mac-address-table interface</b>	Displays all address information about the specified interface.
<b>show mac-address-table count</b>	Displays the number of addresses in the address table.

**Platform** N/A  
**Description**

## 2.23 snmp trap mac-notification

Use this command to enable the MAC address trap notification on the specified interface. Use The **no** or **default** form of the command to restore the default setting.

**snmp trap mac-notification { added | removed }**

**no snmp trap mac-notification { added | removed }**

**default snmp trap mac-notification { added | removed }**

Parameter	Parameter	Description
<b>Description</b>	<i>added</i>	Notifies when a MAC address is added.
	<i>removed</i>	Notifies when a MAC address is removed

**Defaults** This function is disabled by default.



**Command** Interface configuration mode.  
**Mode**

**Usage Guide** Use **show mac-address-table notification interface** to display configuration.

**Configuration** The following example enables the MAC address trap notification on interface gigabitethernet 1/1.

**Examples**

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# snmp trap mac-notification added
```

Related Commands	Command	Description
	<b>mac-address-table notification</b>	Enables MAC address notification.
	<b>show mac-address-table notification</b>	Displays the MAC address notification configuration and the MAC address notification table.

**Platform** N/A  
**Description**

## 3 Aggregate Port Commands

### 3.1 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 } src\_ip dst\_ip**

**no aggregate bfd-detect { ipv4 }**

#### Parameter Description

Parameter	Description
<b>ipv4</b>	Enables IPv4 BFD when the AP port is configured with an IPv4 address.
<i>src_ip</i>	Specifies source IP address, namely, the IP address configured on the AP port.
<i>dst_ip</i>	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** If you want to enable BFD on the AP port, you should see corresponding configuration guide for BFD parameter settings.

Different products vary in support for IPv4/IPv6 BFD on AP port.

If an AP port supports both IPv4 and IPv6 BFD, it is allowed to enable both IPv4 and IPv6 BFD at the same time.

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
N/A	N/A

**Platform** N/A

**Description**

### 3.2 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	Parameter	Description
Description	<i>capacity-mode</i>	Configures the capacity mode.

**Defaults** The default *capacity-mode* varies with the device.

**Command Mode** Global configuration mode

**Usage Guide** The system provides several capacity modes for devices that support capacity mode configuration. To restore the default settings, run **no aggregateport capacity mode** in global configuration mode.

**Configuration Examples** The following example configures 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

### 3.3 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** | **s** **src-dst-ip-l4port** | **enhanced profile** *profile-name* | **round-robin**}

**no aggregateport load-balance**

Parameter	Parameter	Description
Description	<b>dst-mac</b>	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.

<b>src-mac</b>	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.
<b>src-dst-ip</b>	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.
<b>dst-ip</b>	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.
<b>src-ip</b>	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.
<b>src-dst-mac</b>	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.
<b>src-dst-ip-l4port</b>	Load balance based on the source IP address, destination IP address, L4 source port number and L4 destination port number.
<b>enhanced profile</b>	Load balance based on the packet type
<b>round-robin</b>	Load balance based on round robin.

**Defaults** The default load balance mode is **src-dst-mac** for the L2 AP port and **src-dst-ip** for the L3 AP port .

**Command Mode** Global configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example configures a load-balance algorithm globally based on the destination MAC address.

```
Ruijie(config)# aggregateport load-balance dst-mac
```

Related Commands	Command	Description
	<b>show aggregateport load-balance</b>	Displays aggregate port configuration.

**Platform Description** N/A

### 3.4 aggregateport 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	Parameter	Description
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

### 3.5 aggregateport 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	Parameter	Description
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** The following example configures GigabitEthernet 0/1 as a primary port.

**Examples**

```
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** N/A

**Description**

## 3.6 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 [ src-id ] [ dst-id ] [ ox-id ]**

**no fcoe field**

**Parameter  
Description**

Parameter	Description
<b>src-port</b>	Load balance based on the source port number of FCOE packets.
<b>dst-port</b>	Load balance based on the destination port number of FCOE packets.
<b>ox-id</b>	Load balance based on the Originator Exchange ID 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** The following example sets the load balance mode for FCOE packets to **src-id** and **src-port**.

**Examples**

```
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** N/A  
**Description**

## 3.7 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
<i>ap-number</i>	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** The following example creates AP 5 and enters its interface configuration mode.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# interfaces aggregateport 5
Ruijie(config-if-Aggregateport 5)# end
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A  
**Description**

### 3.8 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	Parameter	Description
Description	<b>src-ip</b>	Load balance based on the source IP address of the IPv4 packet.
	<b>dst-ip</b>	Load balance based on the destination IP address of the IPv4 packet.
	<b>protocol</b>	Load balance based on the protocol type of the IPv4 packet.
	<b>l4-src-port</b>	Load balance based on the L4 source port number of the IPv4 packet.
	<b>l4-dst-port</b>	Load balance based on the L4 destination port number of the IPv4 packet.
	<b>src-port</b>	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

### 3.9 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** ] [ **src-port** ]

**no ipv6 field**

Parameter	Parameter	Description
-----------	-----------	-------------



<b>Description</b>	<b>src-ip</b>	Load balance based on the source IP addresses of the IPv6 packets.
	<b>dst-ip</b>	Load balance based on the destination IP addresses of the IPv6 packets.
	<b>protocol</b>	Load balance based on the protocol types of the IPv6 packets.
	<b>src-port</b>	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** The following example sets the load balance mode of IPv6 packets to **src-ip**.

**Examples**

```
Ruijie(config)# load-balance-profile apl
Ruijie(config-load-balance-profile)# ipv6 field src-ip
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	N/A	N/A

**Platform Description** N/A

### 3.10 I2 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.

**I2 field [ src-mac ] [ dst-mac ] [ I2-protocol ] [ vlan ] [ src-port ]**  
**no I2 field**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<b>src-mac</b>	Load balance based on the source MAC address of the L2 packet.
	<b>dst-mac</b>	Load balance based on the destination MAC address of the L2 packets.
	<b>I2-protocol</b>	Load balance based on the L2 protocol type of the L2 packet.
	<b>vlan</b>	Load balance based on the VLAN ID of the L2 packet.
	<b>src-port</b>	Load balance based on the source port number of the L2 packet.

**Defaults** The default load balance mode is **src-mac**, **dst-mac**, and **vlan**.

**Command Mode** Load balance profile configuration mode

**Usage Guide** You need to configure the load balance profile first.

**Configuration** The following example sets the load balance mode of L2 packets to **src-mac** and **src-prot**.

**Examples**

```
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** N/A

**Description**

### 3.11 lacp individual 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 enable**

**no lacp individual 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.

**Configuration** This example shows how to enable the independent port function for GigabitEthernet 0/1.

**Examples**

```
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 ...
```

Related Commands	Command	Description
	N/A	N/A

Platform N/A  
Description

## 3.12 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
	<i>port-priority</i>	The LACP port priority, in the range from 0 to 65535.

Defaults The default is 32768.

Command Interface configuration mode  
Mode

Usage Guide N/A

Configuration This example sets the LACP port priority of interface Gi0/1 to 4096.

Examples  
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 N/A  
Description

## 3.13 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	Parameter	Description

<b>Description</b>		
	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** The following example configures the short-timeout mode for the LACP AP member port.

**Examples**

```
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# lacp short-timeout
```

<b>Related Commands</b>	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

### 3.14 lacp system-priority

Use this command to set the LACP system priority. Use the **no** form of this command to restore the default setting.

**lacp system-priority** *system-priority*

**no lacp system-priority**

<b>Parameter Description</b>	Parameter	Description
	<i>system-priority</i>	The LACP system priority, in the range from 0 to 65535.

**Defaults** The default is 32768.

**Command Mode** Global configuration mode.

**Usage Guide** LACP system priority consists of the Layer2 management MAC address and its priority value, where the MAC address is fixed but the priority value is configurable. If two priorities are equal, then the smaller the MAC address is, the higher the priority is. All LACP groups on the switch share the system priority. Changing the system priority may influence the whole aggregation groups on the switch.

**Configuration** The following example sets the LACP system priority to 4096.

**Examples** Ruijie(config)# lacp system-priority 4096

Related Commands	Command	Description
	<b>port-group</b> <i>key</i> <b>mode</b> { <b>active</b>   <b>passive</b> }	Enables the LACP on the port and specifies the aggregation group ID and operation mode.
	<b>lacp port-priority</b>	Sets the LACP port priority.

**Platform** N/A

**Description**

### 3.15 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 setting.

**load-balance-profile** *profile-name*

**no load-balance-profile** *profile-name*

**no load-balance-profile**

Parameter Description	Parameter	Description
	<i>profile-name</i>	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** The following example creates a load balance profile named **apl**.

**Examples** 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** N/A

**Description**

### 3.16 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** ]

**no mpls field**

Parameter	Parameter	Description
Description	<b>top-label</b>	Load balance based on the destination top labels of the MPLS packets.
	<b>2nd-label</b>	Load balance based on the destination second labels of the MPLS packets.
	<b>3rd-label</b>	Load balance based on the destination second labels 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**.

```
Ruijie(config)# load-balance-profile apl
Ruijie(config-load-balance-profile)# mpls field src-port
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 3.17 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	Parameter	Description
Description	<i>port-group-number</i>	Member group ID of an aggregate port, the interface number of the aggregate port.
	<i>key-number</i>	Member group ID of an LACP aggregate port, the interface number of

	the LACP aggregate port.
<b>active</b>	Places a port into an active negotiating state, in which the port initiates negotiations with remote ports by sending LACP packets.
<b>passive</b>	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** Interface configuration mode.

**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** The following example specifies the Ethernet interface 1/3 as a member of the static AP 3.

**Examples**

```
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** N/A

**Description**

## 3.18 show aggregateport

Use this command to display the aggregate port configuration.

**show aggregateport** { [ *aggregate-port-number* ] **summary** | **load-balance** }

Parameter Description	Parameter	Description
	<i>aggregate-port-number</i>	Number of the aggregate port.
	<b>load-balance</b>	Displays the load-balance algorithm on the aggregate port.
	<b>summary</b>	Displays the summary of the aggregate port.

**Defaults** N/A

**Command** Any mode

**Mode**

**Usage Guide** If the aggregate port number is not specified, all the aggregate port information will be displayed.

**Configuration** The following example displays the aggregate port configuration.

**Examples**

```
Ruijie# show aggregateport 1 summary
AggregatePort  MaxPorts      SwitchPort Mode    Load balance      Ports
-----
Ag1             8             Enabled    ACCESS  dst-mac             Gi0/2
```

Related Commands	Command	Description
	<b>aggregateport load-balance</b>	Configures a load-balance algorithm of AP.

**Platform** N/A

**Description**

## 3.19 show aggregateport capacity

Use this command to display the AP capacity mode and the AP number.

**show aggregateport capacity**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** N/A

**Command Mode** Any mode

**Usage Guide** N/A

**Configuration** The following example displays the AP capacity mode and the AP number.

**Examples**

```
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.
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**



## 3.20 show lacp summary

Use this command to display the LACP aggregation information.

**show lacp summary** [ *key* ]

Parameter Description	Parameter	Description
	<i>key</i>	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** The following example displays the LACP aggregation information.

### Examples

```
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
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.
Dev ID	Partly Displays the system MAC information of the peer device.

#### Related Commands

Command	Description
<b>port-group</b> <i>key mode</i>	Enables the LACP on the port and specifies the aggregation group ID and operation mode.

**Platform** N/A  
**Description**

## 3.21 show load-balance-profile

Use this command to display the enhanced profile.

**show load-balance-profile** [ *profile-name* ]

Parameter	Parameter	Description
<b>Description</b>	<i>profile-name</i>	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 the enhanced profile of LACP AP 3..

```
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

Related Commands	Command	Description
	N/A	N/A

Platform Description	N/A
-------------------------	-----

## 4 VLAN Commands

### 4.1 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
	<i>interface-id</i>	Layer-2 Ethernet interface or layer-2 AP port.
	<b>range</b> <i>interface-range</i>	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
<b>show interface</b> <i>interface-id</i> <b>switchport</b>	Displays the layer-2 interfaces.

**Platform** N/A

**Description**

## 4.2 controller vlan trunk allowed

Use this command to add or delete a allowed VLAN via NETCONF. Specifically, the VLAN created and pushed by NETCONF will be added to the allowed VLAN list of all Trunk ports; the VLAN deleted via NETCONF will be removed from the allowed VLAN list of all Trunk ports. Use the **no** or **default** form of this command to restore the default setting.

**controller vlan trunk allowed**

**no controller vlan trunk allowed**

**default controller vlan trunk allowed**

#### Parameter Description

Parameter	Description
N/A	N/A

**Defaults** This function is disabled by default. NETCONF will affect the allowed VLAN configuration.

**Command mode** Global configuration Mode.

**Usage Guide** N/A

**Configuration** The following example enables this function.

**Examples** Ruijie(config)# controller vlan trunk allowed

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 4.3 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
	<i>vlan-name</i>	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** The following example sets the name of VLAN to 10.

**Examples** Ruijie(config)# vlan 10  
Ruijie(config-vlan)# name vlan10

Related Commands	Command	Description
	<b>show vlan</b>	Displays member ports of the VLAN.

**Platform** N/A

**Description**

## 4.4 show vlan

Use this command to display member ports of the VLAN.

**show vlan** [ id *vlan-id* ]

Parameter Description	Parameter	Description
	<i>vlan-id</i>	VLAN ID

**Defaults** N/A

**Command mode** All modes

**Usage Guide** N/A

**Configuration** The following command displays the status of VLAN 1.

**Examples**

```
Ruijie(config-vlan)#show vlan id 20
VLAN Name                Status    Ports
-----
20 VLAN0020              STATIC    Gi0/1
```

Related Commands	Command	Description
	<b>name</b>	VLAN name.
	<b>switchport access</b>	Adds the interface to a VLAN.

**Platform** N/A  
**Description**

## 4.5 switchport access

Use this command to configure an interface as a static access port and assign it to a VLAN. Use the **no** or **default** form of the command to assign the port to the default VLAN.

**switchport access vlan** *vlan-id*

**no switchport access vlan**

**default switchport access vlan**

Parameter Description	Parameter	Description

<i>vlan-id</i>	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** Ruijie(config)# interface gigabitethernet 1/1

**Examples** Ruijie(config-if)# switchport access vlan 2

**Related Commands**

Command	Description
<b>switchport mode</b>	Specifies the interface as Layer 2 mode (switch port mode).
<b>switchport trunk</b>	Specifies a native VLAN and the allowed-VLAN list for the trunkport.

**Platform** N/A

**Description**

## 4.6 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 a servicechain port. Use the **no** or **default** form of this command to restore the default setting.

**switchport mode { access | trunk | hybrid | uplink }**

**no switchport mode**

**default switchport mode**

**Parameter Description**

Parameter	Description
<b>access</b>	Configures the switch port as an access port.
<b>trunk</b>	Configures the switch port as a trunk port.
<b>hybrid</b>	Configures the switch port as a hybrid port.
<b>uplink</b>	Configures the switch port as an uplink port.

**Defaults** By default, the switch port is an access port.

**Command** Interface configuration mode.



**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.

**Configuration** The following example configures port 1 as an access port.

**Examples**

```
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
```

**Related Commands**

Command	Description
<b>switchport access</b>	Configures an interface as a statics access port and assigns it to a VLAN.
<b>switchport trunk</b>	Specifies a native VLAN and the allowed-VLAN list for the trunkport.

**Platform** N/A

**Description**

## 4.7 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
<b>add</b>	Adds the port to the VLAN.
<b>only</b>	Adds the port to the VLAN and removes the port from the VLANs not on the VLAN list.
<b>tagged</b>	Adds the port to the VLAN and the VLAN packets going out on the port are tagged with VLAN ID.
<b>untagged</b>	Adds the port to the VLAN and the VLAN packets going out on the port are not tagged with VLAN ID.
<b>remove</b>	Removes the port from the VLAN.
<i>vlist</i>	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

## 4.8 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
<i>vlan-id</i>	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

Command	Description
---------	-------------

Commands		
	N/A	N/A

**Platform** N/A

**Description**

## 4.9 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 Description	Parameter	Description
	<b>all</b>	Adds the trunk/uplink port to all VLANs.
	<b>add</b>	Adds the trunk/uplink port to the VLAN.
	<b>remove</b>	Removes the trunk/uplink port from the VLAN port.
	<b>except</b>	Removes the trunk/uplink port from the VLAN and adds the port to all the other VLANs.
	<b>only</b>	Adds the trunk/uplink port to the specified VLAN and removes the port from the VLANs not on the VLAN list.
	<i>vlan-list</i>	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** The following example removes trunk port GigabitEthernet 0/10 from VLAN 2.

**Examples**

```
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
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

## 4.10 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
<i>vlan-id</i>	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** N/A  
**Description**

## 4.11 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
<i>vlan-id</i>	VLAN ID Default VLAN (VLAN 1) cannot be removed.
<i>vlan-range</i>	VLAN ID range.

**Defaults** The default is static VLAN.

**Command mode** Global configuration mode.

**Usage Guide** N/A

**Configuration Examples** The following example creates VLAN 10.

```
Ruijie(config)# vlan 10
```

```
Ruijie(config-vlan)#
```

**Related Commands**

Command	Description
<b>show vlan</b>	Displays member ports of the VLAN.

**Platform** N/A

**Description**

## 5 Protocol VLAN Commands

### 5.1 protocol-vlan ipv4 (in 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
	<i>addr</i>	IP address in the x.x.x.x format.
	<i>id</i>	VLAN ID, the maximal VLAN the product supports
Defaults	It is disabled by default.	
Command mode	Global configuration mode.	
Usage Guide	N/A	
Configuration Examples	The following example configures VLAN 100 for the specified subnet. <pre>Ruijie(config)# protocol-vlan ipv4 192.168.100.3 mask 255.255.255.0 vlan 100</pre>	
Platform Description	N/A	

### 5.2 protocol-vlan ipv4 (in 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** An interface must work in Trunk/Hybrid mode.

**Configuration** The following example enables the subnet VLAN.

**Examples**

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# switchport
Ruijie(config-if-GigabitEthernet 0/1)# switchport mode hybrid
Ruijie(config-if-GigabitEthernet 0/1)# protocol-vlan ipv4
```

**Related Commands**

Command	Description
<b>no protocol-vlan ipv4</b>	N/A

**Platform** N/A

**Description**

### 5.3 protocol-vlan profile (in 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
<i>num</i>	Profile indexes
<i>type</i>	Type of message and Ethernet
<i>value</i>	Service access point type.

- Defaults** It is disabled by default.
- Command mode** Global configuration mode.
- Usage Guide** N/A

**Configuration** The following example configures the profile for the VLAN.

**Examples**

```
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
<b>show protocol-vlan profile</b>	N/A
<b>show protocol-vlan profile <i>num</i></b>	N/A
<b>no protocol-vlan profile</b>	N/A
<b>no protocol-vlan profile <i>num</i></b>	N/A

**Platform** N/A

**Description**

## 5.4 protocol-vlan profile (in 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
<i>num</i>	Profile indexes
<i>id</i>	VLAN ID, the maximal VLAN the product supports.

**Defaults** This function is disabled by default.

**Command mode** Interface EXEC mode.

**Usage Guide** N/A

**Configuration** The following example applies profile 1 to VLAN 101.

**Examples**

```
Ruijie(config-if)# protocol-vlan profile 1 vlan 101
```

**Related  
Commands**

Command	Description
<b>show protocol-vlan profile</b>	N/A
<b>show protocol-vlan profile <i>num</i></b>	N/A
<b>no protocol-vlan profile</b>	N/A

<b>no protocol-vlan profile</b> <i>num</i>
--

N/A
-----

**Platform** N/A

**Description**

## 5.5 show protocol-vlan

Use this command to display a protocol VLAN.

**show protocol-vlan** [ **profile** [ *id* ] | **ipv4** ]

**Parameter**  
**Description**

Parameter	Description
-----------	-------------

<i>id</i>	Profile index.
-----------	----------------

**Defaults** N/A

**Command mode** Privileged EXEC mode.

**Usage Guide** N/A

**Configuration** The following example displays the configuration of protocol VLAN.

**Examples** 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**

## 6 MSTP Commands

### 6.1 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
	<i>H.H.H</i>	Indicates that only the BPDU messages from this MAC address are received.
	<b>no</b>	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** BPDU source MAC address check prevents BPDU packets from maliciously attacking switches and causing MSTP abnormal. When the switch connected to a port on a point-to-point link is determined, you can enable BPDU source MAC address check to receive BPDU packets sent only by the peer switch and discard all other BPDU packets, thereby preventing malicious attacks. You can enable the BPDU source MAC address check in interface configuration mode for a specific port. One port can only filter one MAC address.

**Configuration Examples** The following example indicates only the BPDU with 00d0.f800.1e2f as the source MAC address will be received by interface Gi 1/1 .

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if-interface-id-interface-id)# bpdu src-mac-check
00d0.f800.1e2f
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 6.2 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** The following example enables BPDU transparent transmission.

**Examples** Ruijie(config)# bridge-frame forwarding protocol bpdu

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 6.3 clear spanning-tree counters

Use this command to clear the statistics of the sent and received STP packets.

**clear spanning-tree detected-protocols [ interface *interface-id* ]**

Parameter Description	Parameter	Description
	<i>interface-id</i>	ID of the interface

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** It is used to clear the statistics of the sent and received STP packets.

**Configuration** The following example clears the statistics of the sent and received STP packets.

**Examples** Ruijie# clear spanning-tree counters

The following example clears the statistics of the sent and received packets on interface Gi 0/1.

Ruijie# clear spanning-tree counters interface gigabitethernet 0/1

**Related Commands**

Command	Description
show spanning-tree counters	Displays the statistics of STP transceived packets.

**Platform** N/A

**Description**

## 6.4 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
<i>interface-id</i>	ID of the interface

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** Use this command to force the interface to send the RSTP BPDU message.

**Configuration** Forces to check the version of all interfaces.

**Examples** Ruijie# clear spanning-tree detected-protocols

**Related Commands**

Command	Description
show spanning-tree interface	Displays the STP configuration of the

	<b>interface.</b>
--	-------------------

**Platform** N/A**Description**

## 6.5 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
<i>instance-id</i>	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** The following example clears STP topology change record.**Examples**

```
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** N/A**Description**

## 6.6 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
<i>instance-id</i>	Instance ID, in the range from 0 to 64
<i>vlan-range</i>	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

This example enters MST mode and maps VLAN 3 and 5-10 to MST instance1.

#### Examples

```
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 N/A

Description

## 6.7 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  
Mode Global configuration mode

Usage Guide If you want to BPDU TUNNEL globally, enable BPDU TUNNEL on the interface first.

Configuration The following example enables BPDU TUNNEL globally.

Examples

```
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 N/A

Description

## 6.8 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**

<b>Parameter Description</b>	<table> <tr> <th>Parameter</th><th>Description</th></tr> <tr> <td>N/A</td><td>N/A</td></tr> </table>	Parameter	Description	N/A	N/A
Parameter	Description				
N/A	N/A				
<b>Defaults</b>	N/A				
<b>Command Mode</b>	Interface configuration mode				
<b>Usage Guide</b>	If you want to BPDU TUNNEL globally, enable BPDU TUNNEL on the interface first.				
<b>Configuration Examples</b>	<p>The following example enables BPDU TUNNEL on the interface.</p> <pre> 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 </pre>				
<b>Related Commands</b>	<table> <tr> <th>Command</th><th>Description</th></tr> <tr> <td>N/A</td><td>N/A</td></tr> </table>	Command	Description	N/A	N/A
Command	Description				
N/A	N/A				
<b>Platform Description</b>	N/A				

## 6.9 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**

<b>Parameter Description</b>	<table> <tr> <th>Parameter</th><th>Description</th></tr> <tr> <td><i>mac-address</i></td><td>The STP address for transparent transmission.</td></tr> </table>	Parameter	Description	<i>mac-address</i>	The STP address for transparent transmission.
Parameter	Description				
<i>mac-address</i>	The STP address for transparent transmission.				
<b>Defaults</b>	The default is 01d0.f800.0005.				
<b>Command Mode</b>	Global configuration mode				
<b>Usage Guide</b>	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** The following example configures the STP address for transparent transmission through BPDU

**Examples** TUNNEL.

```
Ruijie(config)# l2protocol-tunnel stp tunnel-dmac 011a.a900.0005
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 6.10 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
<i>name</i>	MST name, up to 32 characters.

**Defaults** The default 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** This example sets MST name to region1.

```
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 Commands	Command	Description
	N/A	N/A

Platform N/A  
Description

## 6.11 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
	<i>version</i>	MST revision number, in the range from 0 to 65535.

### Defaults

The default is 0.

Command MST configuration mode  
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 This example sets revision number to 1.

```
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  Vlan Mapped
-----
0         : ALL
Ruijie(config-mst)# exit
Ruijie(config)#
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 6.12 show l2protocol-tunnel stp

Use this command to display BPDU TUNNEL configuration.

**show l2protocol-tunnel stp**

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 BPDU TUNNEL configuration.

**Examples**

```
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** N/A  
**Description**

## 6.13 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
	<b>summary</b>	Displays the information of MSTP instances and forwarding status of the interfaces.

<b>inconsistentports</b>	Displays the block port due to root guard or loop guard.
<b>forward-time</b>	Displays BridgeForwardDelay.
<b>hello-time</b>	Displays BridgeHelloTime.
<b>max-age</b>	Displays BridgeMaxAge.
<b>max-hops</b>	Displays the maximum hops of an instance.
<b>tx-hold-count</b>	Displays TxHoldCount.
<b>pathcost method</b>	Displays the method used for calculating path cost.
<b>counters</b>	Displays the statistics of STP transceived packets.

**Defaults** N/A

**Command Mode** Privileged EXEC mode, global configuration mode and interface configuration mode.

**Usage Guide** N/A

**Configuration** The following example displays the global spanning-tree configuration.

**Examples** Ruijie# show spanning-tree hello-time

The following example displays the sent and received STP packets.

Ruijie# show spanning-tree counters

```

----- STP BPDU count -----
Port                                Receive      Send
GigabitEthernet 0/3                0            122594

----- STP TC or TCN count -----
MSTID    Port                                Receive      Send
0         GigabitEthernet 0/3                0            0

```

**Related Commands**

Command	Description
<b>spanning-tree pathcost method</b>	Sets the pathcost method.
<b>spanning-tree forward-time</b>	Sets BridgeForwardDelay.
<b>spanning-tree hello-time</b>	Sets BridgeHelloTime.
<b>spanning-tree max-age</b>	Sets BridgeMaxAge.
<b>spanning-tree max-hops</b>	Sets the maximum hops of an instance.
<b>spanning-tree tx-hold-count</b>	Displays TxHoldCount.

**Platform** N/A

**Description**

## 6.14 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* [ { **bpdupfilter** | **portfast** | **bpduguard** | **link-type** } ]

### Parameter Description

Parameter	Description
<i>interface-id</i>	Interface ID
<b>bpdupfilter</b>	Displays the status of BPDU filter.
<b>portfast</b>	Displays the status of portfast.
<b>bpduguard</b>	Displays the status of BPDU guard.
<b>link-type</b>	Displays the link type of an interface.

**Defaults** N/A

**Command Mode** Privileged EXEC mode, global configuration mode and interface configuration mode.

**Usage Guide** N/A

**Configuration Examples** The following example displays the STP configuration on interface Gi 0/1.

```
Ruijie# show spanning-tree int gi 0/1

PortAdminPortFast : Disabled
PortOperPortFast : Disabled
PortAdminAutoEdge : Enabled
PortOperAutoEdge : Disabled
PortAdminLinkType : auto
PortOperLinkType : point-to-point
PortBPDUGuard : Disabled
PortBPDUFilter : Disabled
PortGuardmode : None

##### MST 0 vlans mapped :ALL
PortState : forwarding
PortPriority : 128
PortDesignatedRoot : 32768.001a.a979.00ea
PortDesignatedCost : 0
PortDesignatedBridge :32768.001a.a979.00ea
PortDesignatedPortPriority : 128
PortDesignatedPort : 1
PortForwardTransitions : 1
PortAdminPathCost : 200000
```

```
PortOperPathCost : 200000
Inconsistent states : normal
PortRole : rootPort
```

**Related  
Commands**

Command	Description
<b>spanning-tree bpdufilter</b>	Enables the BPDU filter feature someone the interface.
<b>spanning-tree portfast</b>	Enables the portfast on the interface.
<b>spanning-tree bpduguard</b>	Enables the BPDU guard on the interface.
<b>spanning-tree link-type</b>	Sets the link type of the interface to point-to-point.

**Platform** N/A

**Description**

## 6.15 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
<b>configuration</b>	The MST configuration of the equipment.
<i>instance-id</i>	Instance number
<i>interface-id</i>	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** The following example displays the information of MST and instances.

**Examples**

```
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
<b>spanning-tree mst configuration</b>	Configures the MST region.
<b>spanning-tree mst cost</b>	Displays the path cost of the instance.
<b>spanning-tree mst max-hops</b>	Displays the maximum hops of the instance.
<b>spanning-tree mst priority</b>	Displays the equipment priority of the instance.
<b>spanning-tree mst port-priority</b>	Displays the port priority of the instance.

Platform N/A

Description

## 6.16 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
<i>instance-id</i>	Instance ID.

Defaults N/A

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

Usage Guide N/A

**Configuration** The following example displays the STP topology change record of instance 0.

**Examples**

```
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

## 6.17 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
<b>forward-time</b> <i>seconds</i>	Interval at which the port status changes, in the range from 4 to 30 in the unit of seconds. The default is 15.
<b>hello-time</b> <i>seconds</i>	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.
<b>max-age</b> <i>seconds</i>	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.

$$2 * (\text{Hello Time} + 1.0\text{snd}) \leq \text{Max-Age Time} \leq 2 * (\text{Forward-Delay} - 1.0\text{snd})$$

If the values do not according with the condition, the settings do not work.

**Configuration** The following example enables the spanning-tree function.

**Examples** Ruijie(config) # **spanning-tree**

The following example configures the BridgeForwardDelay.

Ruijie(config) # spanning-tree forward-time 10

**Related Commands**

Command	Description
<b>show spanning-tree</b>	Displays the global STP configuration.
<b>spanning-tree mst cost</b>	Sets the PathCost of an STP interface.
<b>spanning-tree tx-hold-count</b>	Sets the global TxHoldCount of STP.

**Platform** N/A

**Description**

## 6.18 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
disabled	Disabled Autoedge on the interface.

**Defaults** This function is enabled by default.

**Command Mode** Interface configuration mode.

**Usage Guide** If the designated port of a device does not receive a BPDU from the downlink port within a specific

period (3 seconds), the device regards a network device connected to the designated port, configures the port as an edge port, and switches the port directly into the forwarding state. The edge port will be automatically identified as a non-edge port after receiving a BPDU.

You can run the spanning-tree autoedge disabled command to disable Auto Edge.

**Configuration** The following example disables Autoedge on the interface.

**Examples**

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if-interface-id-interface-id)# spanning-tree autoedge disabled
```

**Related  
Commands**

Command	Description
<b>show spanning-tree interface</b>	Displays the STP configuration information of the interface.

**Platform** N/A

**Description**

## 6.19 spanning-tree bpdudfilter

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 bpdudfilter [ enabled | disabled ]**

**Parameter  
Description**

Parameter	Description
<b>enabled</b>	Enables BPDU filter on the interface.
<b>disabled</b>	Disables BPDU filter on the interface.

**Defaults** This function is disabled by default,

**Command  
Mode** Interface configuration mode.

**Usage Guide** If BPDU filter is enabled on a port, the port neither sends nor receives BPDUs.

**Configuration** The following example enables BPDU filter on interface Gi 1/1.

**Examples**

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if-interface-id-interface-id)# spanning-tree bpdudfilter enable
```

**Related  
Commands**

Command	Description
<b>show spanning-tree interface</b>	Displays the STP configuration of the interface.

**Platform** N/A

**Description**

## 6.20 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**

1. If BPDU guard is enabled on a port, the port enters the error-disabled state after receiving a BPDU.
2. Run command **errdisable recovery [ interval seconds ]** to recover the interface in Error-disabled state.

**Configuration Examples** The following example enables the BPDU guard function on the interface.

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if-interface-id-interface-id)# spanning-tree bpduguard enable
```

Related Commands	Command	Description
	<b>show spanning-tree interface</b>	Displays the STP configuration of the interface.

**Platform Description** N/A

## 6.21 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	Parameter	Description
-----------	-----------	-------------

Description		
	N/A	N/A

**Defaults** This function is disabled by default. .

**Command Mode** Interface configuration mode.

**Usage Guide** If the compatibility mode is enabled on a port, this port will add different MSTI information into the to-be-sent BPDU based on the current port to realize interconnection between Ruijie devices and other SPs' devices.

**Configuration** The following example enables the compatibility mode on interface Gi 0/1.

**Examples**

```
Ruijie(config)# interface gigabitethernet 0/1
Ruijie(config-if-interface-id-interface-id)#spanning-tree compatible enable
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 6.22 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 cannot receive bpd. 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**

1. Enabling loop guard on a root port or backup port will prevent possible loops caused by BPDU receipt failure.
2. The loop guard function and root guard function cannot be enabled at the same time.

**Configuration** The following example enables **loop guard** on interface Gi 0/1.

**Examples**

```
Ruijie(config)# interface gigabitethernet 0/1
Ruijie(config-if-interface-id)# spanning-tree guard loop
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 6.23 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** The following example disables **guard** on interface Gi 0/1.

**Examples**

```
Ruijie(config)# interface gigabitethernet 0/1
Ruijie(config-if-interface-id)# spanning-tree guard none
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 6.24 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**

3. If root guard is enabled, the current root bridge will not change due to incorrect configuration or illegal packet attacks.
4. The loop guard function and root guard function cannot be enabled at the same time.

**Configuration Examples** The following example enables **root guard** on the interface.

```
Ruijie(config)# interface gigabitethernet 0/1
Ruijie(config-if-interface-id)# spanning-tree guard root
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 6.25 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** If TC filter is enabled on a port, the port does not process received TC packets.

**Configuration** The following example enables the tc filtering on the interface.

**Examples**

```
Ruijie(config)# interface gigabitethernet 0/1
Ruijie(config-if-interface-id)# spanning-tree ignore tc
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 6.26 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
	<b>point-to-point</b>	Sets the link type of the interface to point-to-point.
	<b>shared</b>	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** If the link type of a port is point-to-point connection, RSTP can rapidly converge. If the link type is not configured, the device automatically sets the link type based on the duplex mode of the port.

**Configuration** The following example configures the link type of the interface.

**Examples**

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if-interface-id)# spanning-tree link-type point-to-point
```

Related Commands	Command	Description
	<b>show spanning-tree interface</b>	Displays the STP configuration of the interface.

**Platform** N/A

**Description**

## 6.27 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** Enabling loop guard on a root port or backup port will prevent possible loops caused by BPDU receipt failure.

**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** N/A

**Description**

## 6.28 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
<i>hop-count</i>	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 Hop 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**

This example sets the max-hops of the spanning tree to 10 for all instances.

**Examples**

```
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  
Commands**

Command	Description
<b>show spanning-tree</b>	Displays the MSTP information.

**Platform**

N/A

**Description**

## 6.29 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
<b><i>stp</i></b>	Spanning tree protocol(IEEE 802.1d)
<b><i>rstp</i></b>	Rapid spanning tree protocol(IEEE 802.1w)
<b><i>mstp</i></b>	Multiple spanning tree protocol(IEEE 802.1s)

**Defaults** The default is **mstp**.

**Command**

**Mode** Global configuration mode.

**Usage Guide** However, some vendors' devices do not work according to 802.1 protocol standards, possibly causing incompatibility. If other vendors' devices are incompatible with Ruijie devices, run this command to switch the STP mode to a lower version.

**Configuration** The following example sets the STP version.

**Examples** Ruijie(config)# spanning-tree mode stp

**Related  
Commands**

Command	Description
<b>show spanning-tree</b>	Displays the spanning-tree configuration.

**Platform** N/A

**Description**

## 6.30 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**

**Command** Global configuration mode.

**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 configure MSTP Region parameters:

**Configuration** This example enters the MST configuration mode.

**Examples** 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
Multi spanning tree protocol : Enable
Name      : region1
Revision  : 1Instance  Vlans Mapped
-----
0          1-2, 4, 11-4094
1          3, 5-10
-----
Ruijie(config-mst)# exit
Ruijie(config)#

```

#### Related Commands

Command	Description
<b>show spanning-tree mst</b>	Displays the MST region configuration.
<b>instance</b> <i>instance-id</i> <b>vlan</b> <i>vlan-range</i>	Adds VLANs to the MST instance.
<b>name</b>	Configures the name of MST.
<b>revision</b>	Configures the version of MST.

**Platform** N/A

**Description**

## 6.31 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

Interface configuration mode.

**Mode**

**Usage Guide** A higher cost value means a higher path cost.

**Configuration** This example sets the path cost to 400 on the interface associated with instances 3.

**Examples**

```
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
<b>show spanning-tree mst</b>	Displays the MSTP information of an interface.
<b>spanning-tree mst port-priority</b>	Configures the priority of an interface.
<b>spanning-tree mst priority</b>	Configures the priority of an instance.

**Platform** N/A

**Description**

## 6.32 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
<i>Instance-id</i>	Instance ID, in the range of 0 to 64
<i>priority</i>	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.  
Run this command to determine which port in the loop of a region enters the forwarding state.

**Configuration** This example sets the priority of **gigabitethernet 1/1** to 10 in instance 20.

**Examples** Ruijie(config)# interface gigabitethernet 1/1  
 Ruijie(config-if-interface-id)# 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
	<b>show spanning-tree mst</b>	Displays the MSTP information of an interface.
	<b>spanning-tree mst cost</b>	Sets the path cost.
	<b>spanning-tree mst priority</b>	Sets the device priority for different instances.

**Platform** N/A

**Description**

## 6.33 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
	<i>instance-id</i>	Instance ID, in the range of 0 to 64
	<i>priority</i>	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** Configure the switch priority to determine a device as the root of the entire network and to determine the topology of the entire network.

**Configuration** The following example sets the device priority of the Instance to 8192.

**Examples** Ruijie(config)# 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

<b>show spanning-tree mst</b>	Displays the MSTP information of an interface.
<b>spanning-tree mst cost</b>	Sets path cost.
<b>spanning-tree mst port-priority</b>	Sets the port priority of an instance.

**Platform** N/A

**Description**

## 6.34 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
	<b>Long [ standard ]</b>	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.
	<b>short</b>	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** If the port path cost uses the default value, the device automatically calculates the port path cost based on the port rate.

**Configuration** The following example configures the path cost of the port.

**Examples** Ruijie(config-if)# spanning-tree pathcost method long

Related Commands	Command	Description
	<b>show spanning-tree interface</b>	Displays the STP configuration of the interface.

**Platform** N/A

**Description**

## 6.35 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
<b>disabled</b>	Disables the portfast on the interface.

**Defaults** This function is disabled by default.

**Command  
Mode** Interface configuration mode.

**Usage Guide** After PortFast is enabled on a port, the port directly enters the forwarding state. However, since the Port Fast Operational State becomes disabled due to receipt of BPDUs, the port can properly run the STP algorithm and enter the forwarding state.

**Configuration** The following example enables the portfast on the interface.

**Examples**

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if-interface-id)# spanning-tree portfast
```

**Related  
Commands**

Command	Description
show spanning-tree interface	Displays the STP configuration of the interface.

**Platform  
Description** N/A

## 6.36 spanning-tree portfast bpdudfilter 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 bpdudfilter default**

**no spanning-tree portfast bpdudfilter 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** The following example enables the BPDU filter function globally.

**Examples** Ruijie(config)# spanning-tree portfast bpdupfilter default

Related Commands	Command	Description
	show spanning-tree interface	Displays the global STP configuration.

**Platform** N/A

**Description**

## 6.37 spanning-tree portfast bpduguard default

Use this command to enable the BPDU 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 Description	Parameter	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.

 The global BPDU guard takes effect only when PortFast is enabled on a port.

**Configuration** The following example enables the GPDU guard globally.

**Examples** Ruijie(config)# spanning-tree portfast bpduguard default

Related Commands	Command	Description
	show spanning-tree interface	Displays the global STP configuration.

**Platform** N/A

**Description**

## 6.38 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
	<b>show spanning-tree interface</b>	Displays the global STP configuration.

**Platform Description** N/A

## 6.39 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** Enable TC guard to prevent TC packets from spreading.

**Configuration** The following example enables **tc-guard** on interface Gi 1/1.

**Examples**

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if-interface-id)# spanning-tree tc-guard
```

Related Commands	Command	Description
	<b>show spanning-tree</b>	Displays the global STP configuration.
	<b>show spanning-tree interface</b>	Displays the STP configuration of the interface.

**Platform** N/A

**Description**

## 6.40 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 Description	Parameter	Description
	N/A	N/A

**Defaults** This function is disabled by default.

**Command Mode** Global configuration mode.

**Usage Guide** N/A

**Configuration** The following example enables **tc-guard** on the interface to prevent the spread of TC messages.

**Examples**

```
Ruijie(config)# spanning-tree tc-guard
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 6.41 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

## 6.42 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** Enable TC guard to prevent TC packets from spreading.

**Configuration** The following example enables tc-guard to prevent TC packets from being flooded.

**Examples** Ruijie(config)# spanning-tree tc-protection tc-guard

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description** N/A

## 6.43 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
<i>tx-hold-count</i>	Indicates the maximum number of BPDUs sent per second. The value ranges from 1 to 10. The default value is 3.

**Defaults** The default is 3.

**Command  
Mode** Global configuration mode.

**Usage Guide** N/A

**Configuration** The following example sets the maximum number of the BPDU messages sent in one second.

**Examples** Ruijie(config)# spanning-tree tx-hold-count 5

**Related  
Commands**

Command	Description
<b>show spanning-tree</b>	Displays the global MSTP configuration.

**Platform  
Description** N/A

## 7 GVRP Commands

### 7.1 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** The following example enables GVRP PDUs transparent transmission.

**Examples** Ruijie(config)# bridge-frame forwarding protocol gvrp

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 7.2 clear gvrp statistic

Use this command to clear the GVRP statistics for re-counting.

**clear gvrp statistics { interface-id | all }**

Parameter Description	Parameter	Description
	<i>interface-id</i>	Interface id

**Defaults** N/A

**Command mode** Privileged EXEC mode.

**Usage Guide** Use the **show gvrp statistics** to display the statistics.

**Configuration** The following example clears GVRP statistics.

**Examples** Ruijie# clear gvrp statistics all

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 7.3 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** The following example configures the GVRP advertisement mode on the interface.

**Examples** Ruijie(config-if)# gvrp applicant state normal

Related Commands	Command	Description
	show gvrp configuration	Displays the GVRP configurations.



**Platform** N/A  
**Description**

## 7.4 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** The following example enables dynamic VLAN creation.

**Examples**  
Ruijie(config)# gvrp dynamic-vlan-creation enable

**Related Commands**

Command	Description
show gvrp configuration	Displays the GVRP configurations.

**Platform** N/A  
**Description**

## 7.5 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** The following example enables the GVRP function.
- Examples** Ruijie (config) #gvrp enable

Related Commands	Command	Description
	show gvrp configuration	Displays the GVRP configurations.

**Platform** N/A

**Description**

## 7.6 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
	normal	Enables dynamic VLAN creation/registration/canceling on the port.
	disabled	Disables dynamic VLAN creation/registration/canceling on the port.

- Defaults** Dynamic VLAN creation/registration/canceling is enabled by default,
- Command mode** Interface configuration mode.
- Usage Guide** N/A

- Configuration** The following example sets the registration mode.
- Examples** Ruijie (config-if) # gvrp registration mode normal

Related Commands	Command	Description
	show gvrp configuration	Displays the GVRP configurations.

**Platform** N/A  
**Description**

## 7.7 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
	<i>join timer_value</i>	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.
	<i>leave timer_value</i>	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.
	<i>leave all timer_value</i>	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** The following example configures the join timer.

**Examples** Ruijie(config)# gvrp timer join 200

Related Commands	Command	Description
	show gvrp configuration	Displays the GVRP configuration.

**Platform** N/A  
**Description**

## 7.8 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** N/A  
**Description**

## 7.9 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

## 7.10 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
	<i>mac-address</i>	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** N/A

**Description**

## 7.11 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** N/A  
**Description**

## 7.12 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
<i>interface-id</i>	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** Ruijie# show gvrp statistics gigabitethernet 1/1

**Examples** 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 invalid 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** N/A

**Description**

## 7.13 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** Privileged EXEC mode.

**Usage Guide** Use the **show gvrp status** command to display the GVRP status.

**Configuration** The following example displays the GVRP status.

**Examples**

```
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** N/A

**Description**

## 7.14 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** Privileged EXEC mode/Global configuration mode/Interface configuration mode

**Usage Guide** N/A

**Configuration** The following example displays GVRP PDUs TUNNEL configuration.

**Examples**

```
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

## 8 LLDP Commands

### 8.1 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
<b>country</b>	Country code, two bytes. For example, the country code of China is CH.
<b>state</b>	Address information, CA type 1
<b>county</b>	CA type 2
<b>city</b>	CA type 3
<b>division</b>	CA type 4
<b>neighborhood</b>	CA type 5
<b>street-group</b>	CA type 6
<b>leading-street-dir</b>	CA type 16
<b>trailing-street-suffix</b>	CA type 17
<b>street-suffix</b>	CA type 18
<b>number</b>	CA type 19
<b>street-number-suffix</b>	CA type 20
<b>landmark</b>	CA type 21
<b>additional-location-information</b>	CA type 22
<b>name</b>	CA type 23
<b>postal-code</b>	CA type 24
<b>building</b>	CA type 25
<b>unit</b>	CA type 26
<b>floor</b>	CA type 27
<b>room</b>	CA type 28
<b>type-of-place</b>	CA type 29
<b>postal-community-name</b>	CA type 30
<b>post-office-box</b>	CA type 31

<b>additional-code</b>	CA type 32
<i>ca-word</i>	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** The following example configures an LLDP Civic Address (ID: 1).

**Examples**

```
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
	<b>show lldp location civic-location { identifier <i>id</i>   interface <i>interface-name</i>   static }</b>	Displays the information about an LLDP Civic address.

**Platform** N/A

**Description**

## 8.2 clear lldp statistics

Use this command to clear LLDP statistics.

**clear lldp statistics [ interface *interface-name* ]**

Parameter	Parameter	Description
<b>Description</b>	<i>interface-name</i>	Interface name

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** **interface** parameter: clear the LLDP statistics of the specified interface

**Configuration** The following example clears LLDP statistics of interface 1.

**Examples**

```
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	Command	Description
Commands	N/A	N/A

**Platform** N/A

**Description**

### 8.3 clear lldp table

Use this command to clear LLDP neighbor information.

**clear lldp table** [ **interface** *interface-name* ]

Parameter	Parameter	Description
Description	<i>interface-name</i>	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** The following example clears the LLDP neighbor information on interface 1.

**Examples**

```

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	Command	Description
Commands	N/A	N/A
Platform	N/A	
Description		

## 8.4 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	Parameter	Description
Description	<i>device-type</i>	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** LLDP Civic address configuration mode  
**Mode**

**Usage Guide** This command is used to configure the device type in a common LLDP address in LLDP Civic address configuration mode.

**Configuration** The following example sets the device type to switch.

**Examples**

```
Ruijie#config
Ruijie(config)# lldp location civic-location identifier 1
Ruijie(config-lldp-civic)# device-type 1
```

Related	Command	Description
Commands	<b>show lldp location civic-location { identifier <i>id</i>   interface <i>interface-name</i>   static }</b>	Displays LLDP Civic Address information.

**Platform** N/A  
**Description**

## 8.5 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	Parameter	Description
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
	<b>show lldp status</b>	Displays LLDP status information.

**Platform Description** N/A

## 8.6 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	Parameter	Description
Description	N/A	N/A

**Defaults** By default, Ethernet II encapsulation format is used.

**Command Mode** Interface configuration mode.

**Usage Guide****Caution**

To guarantee the normal communication between local device and neighbor device, the same LLDP packet encapsulation format must be used.

**Configuration**

The following example sets LLDP packet encapsulation format to

**Examples**

```
SNAP.Ruijie#config
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if)#lldp encapsulation snap
```

**Related****Command****Description****Commands**

**show lldp status**

Displays LLDP status information.

**Platform**

N/A

**Description**

## 8.7 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****Parameter****Description****Description**

N/A

N/A

**Defaults**

This function is enabled by default.

**Command**

Interface configuration mode.

**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**

The following example configures LLDP error detection.

**Examples**

```
Ruijie#config
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if)#lldp error-detect
```



Related Commands	Command	Description
	<b>show interface status</b>	Displays LLDP status information.

**Platform** N/A  
**Description**

## 8.8 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
	<i>value</i>	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
	<b>show interface status</b>	Displays LLDP status information.

**Platform** N/A  
**Description**

## 8.9 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	<i>value</i>	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. <pre>Ruijie#config Ruijie(config)#lldp hold-multiplier 5</pre>					
Related Commands	<table><tr><th>Command</th><th>Description</th></tr><tr><td><b>show lldp status</b></td><td>Displays LLDP status information.</td></tr></table>	Command	Description	<b>show lldp status</b>	Displays LLDP status information.	
Command	Description					
<b>show lldp status</b>	Displays LLDP status information.					
Platform Description	N/A					

## 8.10 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	Parameter	Description
Description	<i>id</i>	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 <i>id</i> to 1. <pre>Ruijie#config Ruijie(config)#lldp location civic-location identifier 1</pre>	

```
Ruijie(config-lldp-civic)#
```

Related Commands	Command	Description
	<b>show lldp location civic-location</b> { <b>identifier</b> <i>id</i>   <b>interface</b> <i>interface-name</i>   <b>static</b> }	Displays the LLDP Civic Address information.

**Platform** N/A

**Description**

## 8.11 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	Parameter	Description
<b>Description</b>	<i>id</i>	ID of an emergency number, in the range from 1 to 1024.
	<i>tel-number</i>	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** The following example sets an emergency number.

**Examples**

```
Ruijie#config
Ruijie(config)#lldp location elin identifier 1 elin-location 085283671111
```

Related Commands	Command	Description
	<b>show lldp location elin-location</b> { <b>identifier</b> <i>id</i>   <b>interface</b> <i>interface-name</i>   <b>static</b> }	Displays an LLDP emergency number.

**Platform** N/A

**Description**

## 8.12 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	Parameter	Description
Description	<i>ip-address</i>	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
	<b>show lldp local-information</b>	Displays LLDP local information

**Platform Description** N/A

## 8.13 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	Parameter	Description
Description	<b>rx</b>	Only sends LLDPDUs.
	<b>tx</b>	Only receives LLDPDUs.
	<b>txrx</b>	Sends and receives LLDPDUs.

**Defaults** The default is **txrx**.

**Command** Interface configuration mode  
**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** The following example sets LLDP operating mode to tx on the interface.

**Examples**

```
Ruijie#config
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if)#lldp mode tx
```

Related Commands	Command	Description
	<b>show lldp status</b>	Displays LLDP status information

**Platform** N/A  
**Description**

## 8.14 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
	<i>profile-num</i>	ID of an LLDP network policy, in the range from 1 to 1024.

**Defaults** N/A

**Command** Global configuration mode  
**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** The following example creates an LLDP network policy whose ID is 1.  
**Examples**

```
Ruijie#config
Ruijie(config)#lldp network-policy profile 1
Ruijie(config-lldp-network-policy)#
```

Related	Command	Description
Commands	<b>show lldp network-policy profile</b> [ <i>profile-num</i> ]	Displays an LLDP network policy.

Platform N/A  
Description

## 8.15 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	Parameter	Description
Description	N/A	N/A

Defaults This function is disabled by default.

Command Interface configuration mode.  
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** The following example configures LLDP Trap.

### Examples

```
Ruijie#config
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if)#lldp notification remote-change enable
```

Related	Command	Description
Commands	<b>show lldp status</b>	Displays LLDP status information.

Platform N/A  
Description

## 8.16 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	Parameter	Description
Description	<i>seconds</i>	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
	<b>show lldp status</b>	Displays LLDP status information.

**Platform Description** N/A

## 8.17 lldp timer reinit-delay

Use this command to set port initialization delay. Use the **no** form of this command to restore the default setting.

**lldp timer reinit-delay** *seconds*

**no lldp timer reinit-delay**

Parameter	Parameter	Description
Description	<i>seconds</i>	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** The following example sets LLDP port initialization delay to 3 seconds.

**Examples**

```
Ruijie#config
Ruijie(config)#lldp timer reinit-delay 3
```

Related Commands	Command	Description
	show lldp status	Displays LLDP status information.

**Platform** N/A  
**Description**

## 8.18 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
	<i>seconds</i>	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** The following example sets LLDPDU transmission delay to 3 seconds.

**Examples**

```
Ruijie#config
Ruijie(config)#lldp timer tx-delay 3
```

Related Commands	Command	Description
	show lldp status	Displays LLDP status information.

**Platform** N/A  
**Description**



## 8.19 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	Parameter	Description
Description	<i>seconds</i>	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
	<b>show lldp status</b>	Displays LLDP status information.

**Platform Description** N/A

## 8.20 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
<b>basic-tlv</b>	Basic management TLV
<b>port-description</b>	Port Description TLV
<b>system-capability</b>	System Capabilities TLV
<b>system-description</b>	System Description TLV
<b>system-name</b>	System Name TLV
<b>dot1-tlv</b>	802.1 organizationally specific TLV
<b>port-vlan-id</b>	Port VLAN ID TLV
<b>protocol-vlan-id</b>	Port And Protocol VLAN ID TLV
<i>vlan-id</i>	VLAN ID
<i>vlan-name</i>	VLAN Name TLV
<i>vlan-id</i>	VLAN ID corresponding to the specified VLAN name
<b>dot3-tlv</b>	802.3 organizationally specific TLV
<b>link-aggregation</b>	Link Aggregation TLV
<b>mac-physic</b>	MAC/PHY Configuration/Status TLV
<b>max-frame-size</b>	Maximum Frame Size TLV
<b>power</b>	Power Via MDI TLV
<b>med-tlv</b>	LLDP MED TLV
<b>capability</b>	LLDP-MED Capabilities TLV
<b>inventory</b>	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.
<b>location</b>	Location Identification TLV
<b>civic-location</b>	Common address information about the network device in location identification TLVs.
<b>elin</b>	Encapsulated emergency number
<i>id</i>	Policy ID
<b>network-policy</b>	Network Policy TLV
<i>profile-num</i>	ID of network policy
<b>power-over-ethernet</b>	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** The following example configures all IEEE 802.1 TLVs to be advertised.

**Examples**

```
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
<b>show lldp tlv-config interface</b>	Displays the attributes of advertisable TLVs

**Platform  
Description**

N/A

## 8.21 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	Parameter	Description
Description	<i>interface-name</i>	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** N/A  
**Description**

## 8.22 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
	<b>civic-location</b>	Encapsulates a common address of a network device.
	<b>elin</b>	Encapsulates an emergency number.
	<b>identifier</b>	Displays one address or emergency number configured.
	<i>id</i>	Policy ID of configured information
	<b>interface</b>	Displays the address or emergency number on an interface.
	<i>interface-name</i>	Interface name
	<b>static</b>	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-location static
Elin location information
-----
Identifier : t
Elin      : iiiiixixixi
Ports     : Gi1/0/3
-----

```

Related	Command	Description
Commands	N/A	N/A

Platform N/A

Description

## 8.23 show lldp neighbors

Use this command to display the LLDP information about a neighboring device.

**show lldp neighbors** [ **interface** *interface-name* ] [ **detail** ]

Parameter	Parameter	Description
Description	<i>interface-name</i>	Interface name
	<b>detail</b>	All information about a neighboring device

Defaults N/A

Command Privileged EXEC mode

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** The following example displays the neighboring device information received on all ports.

#### Examples

```
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** N/A

**Description**

## 8.24 show lldp network-policy profile

Use this command to display the information about an LLDP network policy.

**show lldp network-policy** { **profile** [ *profile-num* ] | **interface** *interface-name* }

Parameter	Parameter	Description
Description	<i>profile-num</i>	ID of a network policy, in the range from 1 to 1024.
	<i>interface-name</i>	Interface name

**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 Examples**

```
The following example displays the information about a network policy. Ruijie#
show lldp network-policy profile
network-policy information:
-----
Network Policy Profile 1
  voice vlan 2 cos 4 dscp 6
  voice-signaling vlan 2000 cos 4 dscp 6
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 8.25 show lldp statistics

The following example displays LLDP statistics.

**show lldp statistics** [ **global** | **interface** *interface-name* ]

Parameter	Parameter	Description
Description	<i>interface-name</i>	Interface name

**Defaults** N/A

**Command** Privileged EXEC mode  
**Mode**

- Usage Guide**
- **global** parameter: display the global LLDP statistics.
  - **Interface** parameter: display the LLDP statistics of the specified interface.

**Configuration** The following example displays all LLDP statistics.  
**Examples**

```
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 N/A  
Description

## 8.26 show lldp status

Use this command to display LLDP status information.

**show lldp status** [ **interface** *interface-name* ]

Parameter	Parameter	Description
Description	<i>interface-name</i>	Interface name

Defaults N/A

Command Privileged EXEC mode  
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	Command	Description
Commands	N/A	N/A
Platform	N/A	
Description		

## 8.27 show lldp tlv-config

Use this command to display the advertisable TLV configuration of a port.

**show lldp tlv-config** [ *interface interface-name* ]

Parameter	Parameter	Description
Description	<i>interface-name</i>	Interface name
Defaults	N/A	
Command	Privileged EXEC mode	

**Mode**

**Usage Guide**    **Interface** parameter: display the LLDP TLV configuration of the specified interface.

**Configuration**    The following example displays TLV information of port 1.

**Examples**

```
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



## 8.28 { 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	Parameter	Description
Description	<b>voice</b>	Voice application
	<b>voice-signaling</b>	Voice-signaling application
	<i>vlan-id</i>	(Optional) VLAN ID of voice flow. The value ranges from 1 to 4094.
	<b>cos</b>	(Optional) Class of service
	<i>cvalue</i>	(Optional) CoS of the configured voice flow. The value ranges from 0 to 7, and the default value is 5.
	<b>dscp</b>	(Optional) Differentiated services code point
	<i>dvalue</i>	(Optional) DSCP value of the configured voice flow. The value ranges from 0 to 63. The default value is 46.
	<b>dot1p</b>	(Optional) 802.1p priority tagging. The tag frame includes user_priority and vlan id is 0.
	<b>none</b>	(Optional) The network policy is not advertised. VoIP determines the network policy based on its configuration.
	<b>untagged</b>	(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
	<b>show lldp network-policy profile</b> [ <i>profile-num</i> ]	Displays the LLDP network policy.

---

<b>Platform</b>	N/A
<b>Description</b>	

## 9 QinQ Commands

### 9.1 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*

**default dot1q-Tunnel cos** *inner-cos-value* **remark-cos** *outer-cos-value*

Parameter	Parameter	Description
Description	<i>inner-cos-value</i>	Indicates the CoS value of the inner tag.
	<i>outer-cos-value</i>	Indicates the CoS value of the outer tag.
	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
	<b>show interface intf-name remark</b>	N/A

**Platform Description** N/A

### 9.2 frame-tag tpid

Use this command to set the packet TPID compatible with the manufacturer TPID. Use the **no** or **default** form of this command to restore the default setting.

**frame-tag tpid** *tpid*

**no frame-tag tpid**  
**default 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**

If the TPID value of the connected third-party device is not 0x8100 (default value) defined in IEEE802.1Q, the TPID value on the egress used to connect to the third-party device is the TPID value of the third-party device.

**Configuration** The following example sets the packet TPID compatible with the manufacturer TPID.

**Examples**

```
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

## 9.3 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** or **default** form of this command to restore the default setting.

**inner-priority-trust enable**  
**no inner-priority-trust enable**  
**default inner-priority-trust enable**

**Parameter  
Description**

Parameter	Description
N/A	N/A

**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#configure terminal
ruijie(config)# interface gigabitEthernet 0/2
ruijie(config-if)# inner-priority-trust enable
ruijie(config-if)#end
```

**Related Commands**

Command	Description
<b>show inner-priority-trust</b>	N/A

**Platform Description** N/A

## 9.4 I2protocol-tunnel

Use this command to set the dot1q-tunnel port to receive L2 protocol message. Use the **no** or **default** form of this command to disable this function.

**I2protocol-tunnel { stp | gvrp }**

**no I2protocol-tunnel { stp | gvrp }**

**default I2protocol-tunnel { stp | gvrp }**

**Parameter Description**

Parameter	Description
<b>stp</b>	Receives stp message.
<b>gvrp</b>	Receives gvrp message.
<b>no</b>	Removes the settings.

**Defaults** N/A

**Command Mode** Global configuration mode.

**Usage Guide** If the STP and GVRP packets need to be transparently transmitted, this function must be enabled in global configuration mode.

**Configuration** The following example enables the function of receiving L2 protocol gvrp and stp.

**Examples**

```
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** N/A  
**Description**

## 9.5 l2protocol-tunnel enable

Use this command to enable transparent transmission of L2 protocol message. Use the **no** or **default** form of this command to restore the default setting.

**l2protocol-tunnel { stp | gvrp } enable**

**no l2protocol-tunnel { stp | gvrp } enable**

**Parameter  
Description**

Parameter	Description
<b>stp</b>	Transparently transmits stp message.
<b>gvrp</b>	Transparently transmits gvrp message.
<b>no</b>	Removes the settings.

**Defaults** It is disabled by default.

**Command** Intereface configuration mode.  
**Mode**

**Usage Guide**

- If this function is enabled in global and interface configuration modes, STP packets can be transparently transmitted after the bridge-frame forwarding protocol bpdu command is enabled in global configuration mode.

**Configuration** Here is an example of enabling transparent transmission of L2 protocol message :

**Examples**

```
Ruijie#configure
Ruijie(config)# interface fa 0/1
Ruijie(config-if)# l2protocol-tunnel gvrp enable
```

```
Ruijie(config-if)#end
```

#### Related Commands

Command	Description
<b>show l2protocol-tunnel { gvrp   stp }</b>	N/A

**Platform** N/A

**Description**

## 9.6 l2protocol-tunnel tunnel-dmac

Use this command to set the MAC address for the transparent transmission of the corresponding protocol messages. Use the **no** or **default** 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**

**default l2protocol-tunnel { stp | gvrp } tunnel-dmac mac-address**

#### Parameter Description

Parameter	Description
<b>stp</b>	Sets the STP transparent transmission address.
<b>gvrp</b>	Sets the GVRP transparent transmission address.
<i>mac-address</i>	Sets the transparent transmission address.
<b>no</b>	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# configure terminal
Ruijie(config-if)# l2protocol-tunnel gvrp tunnel-dmac 011AA9 000005
Ruijie(config-if)#end
```

#### Related Commands

Command	Description
---------	-------------

<b>show l2protocol-tunnel { gvrp   stp }</b>
--

N/A
-----

**Platform** N/A

**Description**

## 9.7 mac-address-mapping x 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** or **default** form of this command to restore the default setting.

**mac-address-mapping x source-vlan *src-vlan-list* destination-vlan *dst-vlan-id***

**no mac-address-mapping x source-vlan *src-vlan-list* destination-vlan *dst-vlan-id***

**default mac-address-mapping x 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
<b>show interface mac-address-mapping x</b>	N/A

**Platform  
Description** N/A



## 9.8 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** Any mode

**Usage Guide** N/A

**Configuration** The following example displays whether dot1q-tunnel of interface is enabled or not.

**Examples**

```
Ruijie# show dot1q-tunnel
Ports    Dot1q-tunnel
-----  -
Gi0/1    Enable
```

Related Commands	Command	Description
	N/A	N/A

**Platform  
Description**

## 9.9 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** Any 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** N/A

**Description**

## 9.10 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** Any mode

**Usage Guide** N/A

**Configuration** The following example displays whether the priority copy function is enabled.

**Examples**

```
Ruijie# show inner-priority-trust
Port      inner-priority-trust
-----
Gi0/1     enable
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

## 9.11 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** Any mode

**Usage Guide** N/A

**Configuration** The following example displays the VLAN configuration on the dot1q-tunnel port.

**Examples** Ruijie# show interfaces 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** N/A

**Description**

## 9.12 show interface remark

Use this command to display the priority mapping configuration.

**show interface** [ *intf-id* ] **remark**

Parameter Description	Parameter	Description
	<i>intf-id</i>	specifies an interface

**Defaults** N/A

**Command  
Mode** Any mode

**Usage Guide** N/A

**Configuration** The following example displays the priority mapping configuration.

**Examples**

```
Ruijie# show interface remark
Ports          Type          From value  To value
-----
Gi0/1          Cos-To-Cos    3           5
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 9.13 show interfaces mac-address-mapping

Use this command to display the MAC address mapping configuration.

**show interfaces mac-address-mapping**

**Parameter  
Description**

Parameter	Description
N/A	N/A

**Defaults** N/A

**Command  
Mode** Any mode

**Usage Guide** N/A

**Configuration** The following example displays the MAC address mapping configuration.

**Examples**

```
ruijie# show interfaces mac-address-mapping
Ports          Status      Index      Destination-VID Source-VID-list
-----
Gi0/1          active     2          3           2
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 9.14 show l2protocol-tunnel

Use this command to display transparent transmission configuration of L2 protocol.

**show l2protocol-tunnel { gvrp | stp }**

Parameter Description	Parameter	Description
	<b>gvrp</b>	Displays configuration of transparently transmitting gvrp protocol.
	<b>stp</b>	Displays configuration of transparently transmitting stp protocol.

**Defaults** N/A

**Command Mode** Any mode

**Usage Guide** N/A

**Configuration** The following example displays transparent transmission configuration of L2 protocol.

**Examples**

```
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** N/A

**Description**

## 9.15 switchport dot1q-tunnel allowed vlan

Use this command to configure the allowed VLAN of dot1q-tunnel. Use the **no** or **default** form of this command to restore the default setting.

**switchport dot1q-tunnel allowed vlan { [ add ] tagged vlist | [ add ] untagged vlist | remove vlist }**

**no switchport dot1q-tunnel allowed vlan**

**default switchport dot1q-tunnel allowed vlan**

Parameter Description	Parameter	Description
	<b>add</b>	Add allowed VLAN.
	<b>tagged</b>	Tag-carried.

<b>untagged</b>	Not tag-carried.
<i>v_list</i>	vlan id list.

**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
<b>show interface dot1q-tunnel</b>	N/A

**Platform Description** N/A

## 9.16 switchport dot1q-tunnel native vlan

Use this command to configure the default vlan id of dot1q-tunnel. Use the **no** or **default** form of this command to restore the default setting.

**switchport dot1q-tunnel native vlan** *vid*

**no switchport dot1q-tunnel native vlan**

**default switchport dot1q-tunnel native vlan**

**Parameter Description**

Parameter	Description
<b>vid</b>	Configures default vlan id.
<b>no</b>	Configures default vlan as 1.

**Defaults** The default is VLAN 1.

**Command Mode** Interface configuration mode.

**Usage Guide** N/A

**Configuration** The following example specifies default VLAN of dot1q-tunnel port as 8.

**Examples**

```
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** N/A

**Description**

## 9.17 switchport mode dot1q-tunnel

Use this command to configure the interface as the dot1q-tunnel interface. Use the **no** or **default** form of this command to restore the default setting.

**switchport mode dot1q-tunnel**

**no switchport mode**

**default 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** The following example configures the interface as the dot1q-tunnel interface.

**Examples**

```
ruijie(config)# interface gigabitEthernet 0/1
ruijie(config-if)# switchport mode dot1q-tunnel
ruijie(config)# end
```

Related Commands	Command	Description
	show vlan	N/A

**Platform** N/A

**Description**

## 10 Management Ethernet Interface Commands

### 10.1 clear arp-cache oob

Use this command to delete dynamic ARP mapping records from the ARP cache table on the MGMT interface.

**clear arp-cache oob** [ *ip* [ *mask* ] ]

Parameter	Parameter	Description
Description	<i>ip</i>	IP address. The ARP entry with the specified IP address is deleted. If the keyword "trusted" is specified, the trusted ARP entries are deleted. Otherwise, dynamic ARP entries are deleted.
	<i>mask</i>	Subnet mask, that is, subnet in which ARP entries will be deleted. The IP address must be a subnet number. If the keyword "trusted" is specified, the trusted ARP entries of the subnet are deleted. Otherwise, the dynamic ARP entries of the subnet are deleted.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** This command is used to update the ARP cache table.

**Configuration Examples** The following example deletes all dynamic ARP mapping records from the cache table.

```
clear arp-cache oob
```

The following example deletes dynamic ARP entry 1.1.1.1.

```
clear arp-cache oob 1.1.1.1
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A



## 10.2 clear ipv6 neighbors oob

Use this command to clear the neighbor learned dynamically.

**clear ipv6 neighbors oob**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** This command is used to clear the neighbor learned dynamically on the MGMT interface.

**Configuration Examples** The following example clears the dynamic ARP entries on the MGMT interface.

```
Ruijie# clear ipv6 neighbors oob
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 10.3 copy

Use this command to copy the files between the local host and the network host.

**copy** *source-url destination-url*

Parameter	Parameter	Description
Description	<i>source-url</i>	Source URL to copy the destination file.
	<i>destination-url</i>	Destination URL to copy the destination file.

**Defaults** N/A

**Command mode** Privileged EXEC mode

**Usage Guide** The **tftp** can be specified as the prefix of the command **copy** url. Modify the prefix to **oob\_tftp** for the management of the copy of files in the network node.

**Configuration Examples** The following example downloads RGOS.bin from TFTP server 192.168.1.1 on the management network.

```
Ruijie#copy oob_tftp://192.168.1.1/rgos.bin flash:rgos.bin
```

The following example downloads RGOS.bin from TFTP server 2001:1::1 on the management network.

```
Ruijie# copy oob_tftp://2001:1::1/RGOS.bin flash:RGOS.bin
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 10.4 gateway

Use this command to configure the default gateway address for the MGMT interface.

**gateway** *address*

Parameter Description	Parameter	Description
	<i>address</i>	The default gateway address for the IPv4 communication on the MGMT interface.

**Defaults** No gateway is configured by default,

**Command mode** Interface configuration mode

**Usage Guide** The interface type is MGMT and the interface number is constantly 0.

**Configuration Examples** The following example configures the default gateway for the MGMT interface:

```
Ruijie#config
Ruijie(config)#interface mgmt 0
Ruijie(config-if-Mgmt 0)#gateway 192.168.0.1
Ruijie(config-if-Mgmt 0)#end
```

Related Commands	Command	Description
	<b>show interface mgmt</b>	Displays the MGMT interface configurations.

**Platform** N/A  
**Description**

## 10.5 ipv6 gateway

Use this command to configure the default gateway for the MGMT interface.

**ipv6 gateway** *ipv6-address*

Parameter	Parameter	Description
Description	<i>ipv6-address</i>	Default gateway address of MGMT interface.
Defaults	N/A	
Command mode	Interface configuration mode	
Usage Guide	The interface type is MGMT and the interface number is constantly 0.	
Configuration Examples	The following example configures the default gateway address for the MGMT interface:	
	<pre>Ruijie(config)# interface mgmt 0 Ruijie(config-if-Mgmt 0)# ipv6 gateway 2001:1::1</pre>	
Platform	N/A	
Description		

## 10.6 logging server oob

Use this command to specify the MGMT interface to send a log message to the Syslog server.

**logging server oob** *ip-address*

Parameter	Parameter	Description
Description	<i>ip-address</i>	Sets the IP address for the destination host.
Defaults	N/A	
Command Mode	Global configuration mode	
Usage Guide	This command is only used to specify the MGMT interface to send a log message to the Syslog server.	
Configuration Examples	The following example sets the Syslog server IP address to 1.1.1.1.	
	<pre>Ruijie(config)# logging server oob 1.1.1.1</pre>	
Related Commands	Command	Description
	<b>logging on</b>	Enables the log function.

<b>show logging</b>	Displays log packets in the cache area and related log configuration parameters.
<b>logging trap</b>	Sets the level of log information that can be sent to the Syslog server.

**Platform** N/A

**Description**

## 10.7 logging server oob ipv6

Use this command to specify the MGMT interface to send a log message to the Syslog server.

**logging server oob [ ipv6 ] *ipv6-address***

Parameter	Parameter	Description
<b>Description</b>	<i>ipv6-address</i>	Sets the IPv6 address for the destination host.

**Defaults** N/A

**Command Mode** Global configuration mode

**Usage Guide** This command is only used to specify the MGMT interface to send a log to the Syslog server.

**Configuration** The following example sets the Syslog server IPv6 address to 1000::1.

**Examples**  
Ruijie(config)# logging server oob ipv6 1000::1

Related	Command	Description
<b>Commands</b>	N/A	N/A

**Platform** N/A

**Description**

## 10.8 ping oob

Use this command to detect the host connectivity on the management network.

**ping oob *ip-address***

Parameter	Parameter	Description
<b>Description</b>	<i>ip-address</i>	Sets the IP address for the destination host.

**Defaults** N/A

**Command** Privileged EXEC mode

**Usage Guide** This command is only used to detect the connectivity between the hosts on the management network..

**Configuration** The following example detects the connectivity between host 192.168.0.1 and the MGMT interface.

**Examples** Ruijie#ping oob 192.168.0.1

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 10.9 ping oob ipv6

Use this command to detect the IPv6 connectivity between hosts on the management network.

**ping oob [ ipv6 ] *ipv6-address***

Parameter Description	Parameter	Description
	<i>ipv6-address</i>	Sets the IPv6 address for the destination host.

**Defaults** N/A

**Command** Privileged EXEC mode

**Usage Guide** This command is only used to detect the IPv6 connectivity between the hosts on the management network.

**Configuration** The following example detects the connectivity between host 2001:1::1 and the MGMT interface.

**Examples** Ruijie# ping oob ipv6 2001:1::1

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 10.10 telnet oob

Use this command to remotely log in to the host on the management network connected to the MGMT interface.

**telnet oob** [ *ip-address* | *ipv6-address* ]

Parameter	Parameter	Description
Description	<i>ip-address</i>	Indicates an IPv4 address.
	<i>ipv6-address</i>	Indicates an IPv6 address.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** This command is used to remotely log in to the host on the management network connected to the MGMT interface.

**Configuration Examples** The following example logs in to host 192.168.200.1 on the management network.

```
Ruijie#telnet oob 192.168.200.1
```

The following example logs in to the IPv6 host 2001:1::1 on the management network.

```
Ruijie# telnet oob 2001:1::1
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 10.11 traceroute oob

Use this command to trace the route from the MGMT interface to the connected host on the management network.

**traceroute oob** *ip-address*

Parameter	Parameter	Description
Description	<i>ip-address</i>	Sets the IP address for the destination host.

**Defaults** N/A

**Command mode** Privileged EXEC mode.

**Usage Guide** This command is used to trace the route from the MGMT interface to the connected host on the management network.

**Configuration** The following example traces the route to host 192.168.0.1 on the management port.

**Examples** Ruijie# traceroute oob 192.168.0.1

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 10.12 traceroute oob ipv6

Use this command to trace the route to a specified IPv6 host on the management network.

**traceroute oob [ ipv6 ] ipv6-address**

Parameter Description	Parameter	Description
	ipv6-address	Sets the IPv6 address for the destination host.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** This command is only used to detect the IPv6 connectivity between the hosts on the management network.

**Configuration** The following example traces the route to a specified IPv6 host on the management network.

**Examples** Ruijie# traceroute ipv6 oob 2001:1::1

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 10.13 snmp-server host oob

Use this command to specify the MGMT interface to send a trap message to the NMS server.

**snmp-server host oob ip-address**

Parameter	Parameter	Description
Description	<i>ip-address</i>	Sets the IPv4 address for the destination host.
Defaults	N/A	
Command Mode	Global configuration mode	
Usage Guide	This command is used to specify the MGMT interface to send a trap message to the NMS server.	
Configuration Examples	The following example sets the SNMP server IP address to 1.1.1.1.	
	<pre>Ruijie(config)# snmp-server host oob 1.1.1.1</pre>	
Related Commands	Command	Description
	N/A	N/A
Platform Description	N/A	

## 10.14 snmp-server host oob ipv6

Use this command to specify the MGMT interface to send a trap message to the NMS server.

**snmp-server host oob [ ipv6 ] *ipv6-address***

Parameter	Parameter	Description
Description	ipv6-address	Sets the IPv6 address for the destination host.
Defaults	N/A	
Command Mode	Global configuration mode	
Usage Guide	This command is used to specify the MGMT interface to send a trap message to the NMS server.	
Configuration Examples	The following example sets the SNMP server IP address to 1000::1. <pre>Ruijie(config)# snmp-server host oob ipv6 1000::1</pre>	
Related Commands	Command	Description
	N/A	N/A
Platform Description	N/A	



## 10.15 show arp oob

Use this command to display the ARP cache table applied on the MGMT interface.

**show arp oob** [ *ip* [ *mask* ] | **complete** | **incomplete** | *mac-address* ]

Parameter	Parameter	Description
Description	<i>ip</i>	Displays ARP entries of the specified IP address. If keyword <b>trusted</b> is specified, only trusted ARP entries are displayed. Otherwise, untrusted ARP entries are displayed,
	<i>mask</i>	Displays ARP entries within the IP subnet. If keyword <b>trusted</b> is specified, only trusted ARP entries are displayed. Otherwise, untrusted ARP entries are displayed,
	<b>complete</b>	Displays analyzed dynamic ARP entries.
	<b>incomplete</b>	Displays unanalyzed dynamic ARP entries.
	<i>mac-address</i>	Displays ARP entries of the specified MAC address.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the outcome of running the **show arp** command.

**Examples**

```
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
```

Field	Description
Protocol	The network address protocol. The field is "Internet".
Address	The IP address corresponding to the hardware address.
Age (min)	The time period when ARP cache is preserved, measured in minutes. If this parameter is local or configured statically, it is displayed as "-".
Hardware	The hardware address corresponding to the IP address.
Type	Both Hardware type and Ethernet address are ARPA.
Interface	The interface associated with the IP address.

The following example displays the outcome of running the **show arp oob 192.168.195.68**.

```
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 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  Mgmt 0
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

## 10.16 show ipv6 neighbors oob

Use this command to display the IPv6 neighbor table applied on the MGMT interface.

**show ipv6 neighbors oob [ verbose ] [ ipv6-address ]**

**Parameter**

Parameter	Description
-----------	-------------

<b>Description</b>	<b>verbose</b>	Displays the detailed information about the neighbor.
	<i>ipv6-addr</i>	Displays the information about the specified neighbor.
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Privileged EXEC mode	
<b>Usage Guide</b>	N/A	

**Configuration** The following example displays information about IPv6 neighbors on the MGMT interface.

**Examples**

```
Ruijie# show ipv6 neighbors oob
IPv6 Address Linklayer Addr Interface
fa::1          00d0.0000.0002 Mgmt 0
fe80::200:ff:fe00:2 00d0.0000.0002 Mgmt 0
```

The following example displays detailed information about IPv6 neighbors.

```
Ruijie# show ipv6 neighbors oob verbose
IPv6 Address Linklayer Addr Interface
2001::1       00d0.f800.0001 Mgmt 0
                State: Reach/H Age: - asked: 0
fe80::200:ff:fe00:1 00d0.f800.0001 Mgmt 0
                State: Reach/H Age: - asked: 0
```

Field	Description
IPv6 Address	Neighbor IPv6 address,
Linklayer Addr	Link address (MAC address). If the address is not obtained, it is displayed as "incomplete".
Interface	Neighbor interface.
State	<p>Neighbor state: state/H(R)</p> <p>There are following values:</p> <p>INCOMP(Incomplete)—During neighbor address resolution, the neighbor solicitation (NS) packets are sent but the device has not received response packets (neighbor advertisement packets) from the neighbor.</p> <p>REACH(Reachable)—indicates that the neighbor is reachable and the packets can be sent to the neighbor directly.</p> <p>STALE—indicates that the neighbor reachability is due and packets can be sent to the neighbor directly. Neighbor Unreachability Detection (NUD) will start.</p> <p>DELAY—indicates that packets are being sent to the neighbor in STALE state, and the state turns from STALE to DELAY. If the device does not receive NA packets from the neighbor in the period of DELAY_FIRST_PROBE_TIME (five seconds), the state turns from DELAY to PROBE and the device sends NS packets to the neighbor.</p> <p>NUD is ready to start.</p> <p>PROBE—indicates that NUD has been started to detect whether the neighbor is reachable. NS packets are sent to the neighbor every period (RetransTimer milliseconds) until the device receives the response packets or the number of NS packets reaches the MAX UNICAST SOLICIT, that is, 3.</p> <p>?—indicates unknown status.</p> <p>/R—indicates that the neighbor is a device.</p> <p>/H—indicates that the neighbor is a host.</p>
Age	Indicates the period during which the neighbor is considered reachable. "-" represents constant reachability while the static neighbor entries are an exception. Pay attention to whether they are reachable in reality. "expired" indicates that neighbor reachability is due and NUD will start.
Asked	Indicates the number of NS packets sent to the neighbor before the device resolves the link address of the neighbor.

Related	Command	Description
Commands	N/A	N/A

Platform N/A  
Description

## 10.17 show mgmt virtual

Use this command to display the virtual MGMT interface information.

**show mgmt virtual**

Parameter	Parameter	Description
Description	N/A	N/A

Defaults N/A

Command Privileged EXEC mode  
Mode

Usage Guide N/A

**Configuration** The following example displays the MGMT interface information in the VSU.

### Examples

```
Ruijie# show mgmt virtual
MGMT 1/0
Virtual MGMT Member:
    1/M1/MGMT0: Active
    1/M2/MGMT0: Backup
Virtual MGMT Event:
    Last GRTD Fail: N/A
    Last Link Fail: N/A
    Last Board Fail: N/A
    Last IP-Link Fail: N/A

MGMT 2/0
Virtual MGMT Member:
    1/M1/MGMT0: Active
    1/M2/MGMT0: Backup
Virtual MGMT Event:
    Last GRTD Fail: N/A
    Last Link Fail: N/A
    Last Board Fail: N/A
    Last IP-Link Fail: N/A
```

<b>Related Commands</b>	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 11 HASH Simulator Commands

### 11.1 show aggregate load-balance to interface aggregateport *ap-id* ip \*

Use this command to display IPv4 aggregate port (AP) load-balanced forwarding port.

**show aggregate load-balance to interface aggregateport** *ap-id* **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 aggregateport <i>ap-id</i>	AP ID
	source <i>source-ip</i>	Source IPv4 address. The default is 0.0.0.0.
	destination <i>dest-ip</i>	Destination IPv4 address. The default is 0.0.0.0.
	ip-protocol <i>protocol-id</i>	IPv4 protocol ID. For example, the protocol ID of UDP and TCP are 17 and 6 respectively. The default is 0.
	l4-source-port <i>src-port</i>	L4 source port ID. The default is 0.
	l4-dest-port <i>dest-port</i>	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 IPv4 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 IPv4 AP load-balanced forwarding port.

```
Ruijie# show aggregate load-balance to interface aggregateport 1 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	Configured load-balancing mode
balance to port	Forwarding port (physical port)

### 11.2 show aggregate load-balance to interface aggregateport *ap-id* ipv6 \*

Use this command to display IPv6 AP load-balanced forwarding port.

**show aggregate load-balance to interface aggregateport** *ap-id* **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 aggregateport ap-id	AP ID
	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** The following example displays IPv6 AP load-balanced forwarding port.

**Example**

```
Ruijie# show aggregate load-balance to interface aggregateport 1 ipv6 source
2001::0001
aggregateport load-balance mode :    Source IP
balance to port      :    GigabitEthernet 1/0/1
```

Field Description

Field	Description
aggregateport load-balance mode	Configured load balance mode
balance to port	Forwarding port (physical port)

## 11.3 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*]

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

**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** The following example displays IPv4 ECMP load-balanced next hop.

**Example**

```
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 "*" .

## 11.4 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*]

**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

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

**Default Level** 14

**Usage Guide** This command is used to display IPv6 ECMP load-balanced next hop.

**Configuration** The following example displays IPv6 ECMP load-balanced next hop.

**Example**

```
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 "*" .



## IP Address & Application Commands

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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. Network Connectivity Test Tool Commands
10. TCP Commands
11. IPv4/IPv6 REF 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	Parameter	Description
Description	<i>address</i>	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** ]

**no ip address** [ *ip-address network-mask* [ **secondary** ] ]

Parameter Description	Parameter	Description
	<i>ip-address</i>	32-bit IP address, with 8 bits in one group in decimal format. Groups are separated by dots.

<i>network-mask</i>	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.
<b>secondary</b>	Secondary IP address

**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 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.

**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)# interface gigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# ip address 10.10.10.1 255.255.255.0
```

Related Commands	Command	Description
	<b>show interface</b>	Displays detailed information of the interface.

**Platform** N/A

**Description**

## 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
	<i>ip-address</i>	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 the destination address of IP broadcast packets generated by this interface to 0.0.0.0.

```
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# ip broadcast-address 0.0.0.0
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 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-size* ]

**Parameter  
Description**

Parameter	Description
<i>milliseconds</i>	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.
<i>bucket-size</i>	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** N/A

## Description

### 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
<i>access-list-number</i>	(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-GigabitEthernet 0/1)# ip directed-broadcast
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 1.6 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** N/A

**Description**

## 1.7 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 to restore the default setting.

**ip mtu bytes**

**no ip mtu**

Parameter	Parameter	Description
Description	<i>bytes</i>	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 example 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
	<b>mtu</b>	Sets the MTU value of an interface.

**Platform** N/A

**Description**

## 1.8 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	Parameter	Description
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

## 1.9 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** The following example disables the IP source route.

**Examples** Ruijie(config)# no ip source-route

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 1.10 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
	<i>value</i>	Sets the TTL value of the unicast packet, in the range from 0 to 255.

**Defaults** The default is 64.

**Command** Global configuration mode  
**Mode**

**Usage Guide** N/A

**Configuration** The following example sets the TTL value of the unicast packet to 100.

**Examples** Ruijie(config)# ip ttl 100

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 1.11 ip ttl-expires enable

This command is used to enable TTL timeout messages. Use the **no** form of this command to disable TTL timeout messages.

**ip ttl-expires enable**

**no ttl-expires enable**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** By default, TTL timeout messages are enabled.

**Command mode** Global configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example disables TTL timeout messages.

```
Ruijie(config)# no ttl-expires enable
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 1.12 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	Parameter	Description
Description	<i>interface-type</i>	Type of the associated interface
	<i>interface-number</i>	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**

The following example configures the local interface as an unnumbered interface and sets the associated interface to FastEthernet 0/1 (an IP address is configured for the interface).

```
Ruijie(config)# int virtual-ppp 1
Ruijie(config-if)# ip unnumbered fastEthernet 0/1
```

**Related****Commands**

Command	Description
<b>show interface</b>	Displays the detailed information about the interface.

**Platform**

N/A

**Description**

## 1.13 ip unreachable

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 unreachable**

**no ip unreachable**

**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 unreachable
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 1.14 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
	<i>interface-type</i>	Specifies interface type.
	<i>interface-number</i>	Specifies interface number.
	<i>brief</i>	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 example displays the output of the **show ip interface brief** 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 <b>up</b> , <b>down</b> , or <b>administratively down</b> .
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 unreachable 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 unreachable 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 fast 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.

## 1.15 show ip packet queue

Use this command to display the statistics of IP packet queues.

**show ip packet queue**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode.

**Usage Guide** N/A.

**Configuration** The following example displays the statistics of IP packet queues.

**Examples**

```
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	Command	Description
Commands	N/A	N/A

**Platform** N/A

**Description**

## 1.16 show ip packet statistics

Use this command to display the statistics of IP packets.

**show ip packet statistics** [ **total** | *interface-name* ]

Parameter	Parameter	Description
Description	<i>interface-name</i>	Interface name
	<i>total</i>	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
	<b>ip default-gateway</b>	Configures the default gateway, which is only supported on the Layer 2 switch.

**Platform** N/A

**Description**

## 1.17 show ip raw-socket

Use this command to display IPv4 raw sockets.

**show ip raw-socket** [ *num* ]

Parameter	Parameter	Description
Description	<i>num</i>	Protocol.

**Defaults** N/A.

**Command Mode** Privileged EXEC mode.

**Usage Guide** N/A.

**Configuration** The following example displays all IPv4 raw sockets.

**Examples**

```
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	Command	Description
Commands	N/A	N/A

**Platform** N/A

**Description**

## 1.18 show ip sockets

Use this command to display all IPv4 sockets.

**show ip sockets**

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

**Defaults** N/A.

**Command Mode** Privileged EXEC mode.

**Usage Guide** N/A.

**Configuration** The following displays all IPv4 sockets.

**Examples**

```
Ruijie# show ip sockets
```

Number	Process name	Type	Protocol	LocalIP:Port	ForeignIP:Port
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

## 1.19 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
<b>local-port</b> <i>num</i>	Local port number

## Defaults

N/A.

## Command Mode

Privileged EXEC mode.

## Usage Guide

N/A.

## Configuration

The following example displays all IPv4 UDP sockets.

## Examples

```
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	Parameter	Description
Description	<i>ip-address</i>	The IP address that corresponds to the MAC address. It includes four parts of numeric values in decimal format separated by dots.
	<i>MAC-address</i>	48-bit data link layer address
	<i>type</i>	ARP encapsulation type. The keyword is arpa for the Ethernet interface.
	<i>alias</i>	(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

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
<i>num</i>	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**

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.

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 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	Parameter	Description
Description	<i>limit</i>	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

## 2.4 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* [*number*]

**no arp gratuitous-send**

Parameter	Parameter	Description
Description	<i>seconds</i>	The time interval to send the free ARP request message in the range from 1 to 3,600 in the unit of seconds.
	<i>number</i>	The number of free ARP request message to be sent in the range from 1 to 100 with 1 being the default value.

**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** N/A

**Description**

## 2.5 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** *ip-address mac-address type*

**no arp oob** *ip-address*

Parameter	Parameter	Description
Description	<i>ip-address</i>	The IP address corresponding to the MAC address, written as four groups of dotted decimal values.
	<i>mac-address</i>	The data link layer address, composed of 48 bits.
	<i>type</i>	The ARP encapsulation type. The key word for the Ethernet interface is <b>arpa</b> .

**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.

**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

## 2.6 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
	<i>seconds</i>	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
	<b>arp retry times</b>	Number of times for retransmitting an ARP request message.

Platform N/A

Description

## 2.7 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
	<i>number</i>	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
	<b>arp retry interval</b>	Interval for retransmitting an ARP request message

Platform N/A

Description

## 2.8 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	Parameter	Description
Description	<i>seconds</i>	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.

**Configuration Examples** The following example sets the timeout for the dynamic ARP mapping record that is learned dynamically from FastEthernet port 0/1 to 120 seconds.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# arp timeout 120
```

Related Commands	Command	Description
	<b>clear arp-cache</b>	Clears the ARP cache list.
	<b>show interface</b>	Displays the interface information.

**Platform Description** N/A

## 2.9 arp trusted

Use this command to set the maximum number of trusted ARP entries. Use the **no** form of this command to restore the default setting.

**arp trusted** *number*

**no arp trusted**

Parameter	Parameter	Description
Description	<i>number</i>	Maximum number of trusted ARP entries.

**Defaults** N/A

**Command** Global configuration mode.

**Mode**

**Usage Guide** To make this command valid, enable the trusted ARP function firstly. The trusted ARP entries and other entries share the memory. Too much trusted ARP entries may lead to insufficient ARP entry space. In general, you should set the maximum number of trusted ARP entries according to your real requirements.

**Configuration** The following example sets 1000 trusted ARPs.

**Examples** Ruijie(config)# arp trusted 1000

Related Commands	Command	Description
	service trustedarp	Enables the trusted ARP function.

**Platform** N/A

**Description**

## 2.10 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	Parameter	Description
Description	N/A	N/A

**Defaults** This function is disabled by default.

**Command** Interface configuration mode

**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** The following example enables egress gateway trusted ARP.

**Examples** 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	Command	Description
Commands	N/A	N/A

Platform N/A  
Description

## 2.11 arp trusted aging

Use this command to set trusted ARP aging. Use the **no** form of this command to restore the default setting.

**arp trusted aging**

**no arp trusted aging**

Parameter	Parameter	Description
Description	N/A	N/A

Defaults This function is disabled by default.

Command Global configuration mode.  
Mode

Usage Guide Use this command to set trusted ARP aging. Aging time is the same as dynamic ARP aging time. Use the **arp timeout** command to set aging time in interface mode.

Configuration N/A  
Examples

Related	Command	Description
Commands	<b>service trustedarp</b>	Enables trusted ARP function.

Platform N/A  
Description

## 2.12 arp trusted user-vlan

Use this command to execute the VLAN transformation while setting the trusted ARP entries. Use the **no** form of this command to restore the default setting.

**arp trusted user-vlan** *vid1* **translated-vlan** *vid2*

**no arp trusted user-vlan** *vid1* **translated-vlan** *vid2*

Parameter	Parameter	Description
Description	<i>vid1</i>	VID set by the server.



<i>vid2</i>	VID after the transformation.
-------------	-------------------------------

**Defaults** This function is disabled by default.

**Command Mode** Global configuration mode.

**Usage Guide** In order to validate this command, enable the trusted ARP function first. This command is needed only when the VLAN sent by the server is different from the VLAN which takes effect in the trusted ARP entry.

**Configuration Examples** The following example sets the VLAN sent by the server to 3, but the VLAN which takes effect in the trusted ARP entry to 5.

```
Ruijie(config)# arp trusted user-vlan 3 translated-vlan 5
```

Related Commands	Command	Description
	<b>service trustedarp</b>	Enables the trusted ARP function.

**Platform Description** N/A

## 2.13 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
	<i>number</i>	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.

**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	N/A	
Description		

## 2.14 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	Parameter	Description
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.

## 2.15 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	Parameter	Description
Description	N/A	N/A

**Defaults** This function is disabled by default.

<b>Command Mode</b>	Global configuration mode
<b>Default Level</b>	2
<b>Usage Guide</b>	After this function is enabled, ARP requests of STAs are sent to the SDN controller for responses.
<b>Configuration Examples</b>	<p>The following example enables the SDN controller to respond to ARP requests of Overlay router interfaces.</p> <pre>Ruijie(config)#arp vxlan sdn-reply</pre>
<b>Verification</b>	Run the <b>show running-config</b> command to display configurations.

## 2.16 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	Parameter	Description
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 STAs 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.

## 2.17 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 | trusted ] [ ip [ mask ] ] | interface interface-name | vxlan]**

Parameter	Parameter	Description
Description	<i>trusted</i>	Deletes trusted ARP entries. Dynamic ARP entries are deleted by default.
	<i>vrf vrf_name</i>	Deletes dynamic ARP entries of the specified VRF instance. The default is the public instance.
	<i>ip</i>	Deletes ARP entries of the specified IP address. If <i>trusted</i> value is specified, trusted ARP entries are deleted; otherwise, all dynamic ARP entries are deleted which is the default.
	<i>mask</i>	Deletes ARP entries in a subnet mask. If <i>trusted</i> 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.
	<i>interface interface-name</i>	Deletes dynamic ARP entries on the specified interface. Dynamic ARP entries are deleted on all interfaces by default.
	<b>vxlan</b>	Deletes VxLAN-related entries, namely, ARP entries on the overlay router interface.

**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** The following example deletes all dynamic ARP mapping records.

**Examples** 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

Related	Command	Description
Commands	<b>arp</b>	Adds a static mapping record to the ARP cache table.

**Platform Description** N/A

## 2.18 clear arp-cache oob

Use this command to clear dynamic ARP mapping records.

**clear arp-cache oob** [*ip* [*mask*]]

Parameter	Parameter	Description
Description	<i>ip</i>	Clears the ARP table entry of the specified IP address. All dynamic ARP table entries are cleared by default.
	<i>mask</i>	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

## 2.19 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	Parameter	Description
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

## 2.20 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** N/A  
**Description**

## 2.21 service trustedarp

Use this command to enable the trusted ARP function. Use the **no** form of this command to restore the default setting.

**service trustedarp**

**no service trustedarp**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** This function is disabled by default.

**Command Mode** Global configuration mode

**Usage Guide** The trusted ARP function of the device is to prevent the ARP fraud function. As a part of the GSN scheme, it should be used together with the GSN scheme.

In the following three cases, the STP protocol clears not only the dynamic MAC address of a port but also the trusted entries, including trusted MAC and trusted ARP:

STP is enabled.

The port is set to neither root port nor designed port. This may be caused when the port is up or down or the port priority is modified.

TC packet is received on the port, and the addresses of the ports not receiving PC packet are cleared.

**Configuration Examples** The following example enables the trusted ARP function in global configuration mode.

```
config
service trustedarp
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 2.22 show arp

Use this command to display the Address Resolution Protocol (ARP) cache table

**show arp** [ *interface-type interface-number* / **trusted** [*ip* [*mask*]] | [**vrf** *vrf-name*] [*ip* [*mask*] | *mac-address*] **static** | **complete** | **incomplete**]

### Parameter Description

Parameter	Description
<i>interface-type</i> <i>interface-number</i>	Displays the ARP entry of a specified Layer-2 or Layer-3 port.
<b>vrf</b> <i>vrf_name</i>	VRF instance, which Displays the ARP entry with specified VRF.
<b>trusted</b>	Displays the trusted ARP entries. Currently, only the global VRF supports the trusted ARP.
<i>ip</i>	Displays the ARP entry of the specified IP address. If <b>trusted</b> is configured, only trusted ARP entries are displayed. Otherwise, untrusted ARP entries are displayed.
<i>mask</i>	Displays the ARP entries of the network segment included within the mask. If <b>trusted</b> is configured, only trusted ARP entries are displayed. Otherwise, untrusted ARP entries are displayed.
<b>static</b>	Displays all the static ARP entries.
<b>complete</b>	Displays all the resolved dynamic ARP entries.
<b>incomplete</b>	Displays all the unresolved dynamic ARP entries.
<i>mac-address</i>	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
```

The following example displays the output result of **show arp static**

```
Ruijie# show arp static
Protocol Address Age(min) Hardware Type Interface Origin
Internet 192.168.23.55 <static> 0000.0000.0010 arpa VLAN 100
Configure
Internet 192.168.23.56 <static> 0000.0000.0020 arpa VLAN 100
Authentication
Internet 192.168.23.57 <static> 0000.0000.0020 arpa VLAN 100
DHCP-Snooping
2 static arp entries exist.
```

#### Related Commands

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 2.23 show arp oob

Use this command to display the ARP cache table.

**show arp oob** [ *ip* [ *mask* ] | **static** | **complete** | **incomplete** | *mac-address* ]

Parameter	Parameter	Description
<b>Description</b>	<i>ip</i>	Displays ARP table entries of the specified IP address.
	<i>mask</i>	Displays ARP table entries within the IP subnet.
	<b>static</b>	Displays all static ARP table entries.
	<b>complete</b>	Displays all analyzed ARP table entries.
	<b>incomplete</b>	Displays all unanalyzed ARP table entries.
	<i>mac-address</i>	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** The following example displays the outcome of the running the show arp oob command.

### Examples

```
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

## 2.24 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** The following example displays the output result of the **show arp counter** command:

**Examples**

```
Ruijie# show arp counter
The Arp Entry counter:0
The Unresolve Arp Entry:0      1
```

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

## 2.25 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* / trusted [*ip [mask]*] | [**vrf** *vrf-name*] [*ip [mask]* | *mac-address* | **static** | **complete** | **incomplete** ] ]

**Parameter Description**

Parameter	Description
<i>interface-type interface-number</i>	Displays the ARP of the layer 2 port or the layer 3 interface.
<b>vrf</b> <i>vrf_name</i>	VRF instance, which Displays the ARP entry with specified VRF.
<i>trusted</i>	Displays the trusted ARP entries. Currently, only the global VRF supports the trusted ARP.
<i>ip</i>	Displays the ARP entry of the specified IP address.
<i>ip mask</i>	Displays the ARP entries of the network segment included within the mask.
<i>mac-address</i>	Displays the ARP entry of the specified MAC address.
<b>static</b>	Displays all the static ARP entries.
<b>complete</b>	Displays all the resolved dynamic ARP entries.
<b>incomplete</b>	Displays all the unresolved dynamic ARP entries.

**Defaults** N/A

**Command** Privileged EXEC mode

**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.

**Configuration** The following example displays the output result of the **show arp detail** command:

**Examples**

```
Ruijie# show arp detail
```

IP Address	MAC Address	Type	Age (min)	Interface	Port
SubVlan					
20.1.1.2	0020.0101.0002	Static	--	Te2/5	--
20.1.1.1	00d0.f822.33bb	Local	--	Te2/5	--
1.1.1.2	00d0.1111.1112	Dynamic	1	V12	Te2/1 4
1.1.1.1	00d0.f822.33bb	Local	--	V12	--

The following example displays arp details including InnerVLAN on products supporting QinQ termination:

```
Ruijie# show arp detail
```

IP Address	MAC Address	Type	Age (min)	Interface	Port
SubVlan	InnerVlan				
20.1.1.2	0020.0101.0002	Static	--	Te2/5	--
20.1.1.1	00d0.f822.33bb	Local	--	Te2/5	--
1.1.1.2	00d0.1111.1112	Dynamic	1	V12	Te2/1 4
300					
1.1.1.1	00d0.f822.33bb	Local	--	V12	--

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

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

## 2.26 show arp packet statistics

Use this command to display the statistics of ARP packets.

**show arp packet statistics** [ *interface-name* ]

Parameter	Parameter	Description
Description	<i>interface-name</i>	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              R
equests  Replies  Others    Requests  Replies
-----
GigabitEthernet 0/0    0         0         0         0         0
GigabitEthernet 0/1  143649    232        0         2         0
GigabitEthernet 0/2    0         0         0         0         0
GigabitEthernet 0/3    0         0         0         0         0
GigabitEthernet 0/4    0         0         0         0         0
GigabitEthernet 0/5    0         0         0         0         0
GigabitEthernet 0/6    0         0         0         0         0
Loopback 1           0         0         0         0         0
```

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

## 2.27 show arp timeout

Use this command to display the aging time of a dynamic ARP entry on the interface.

**show arp timeout**

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

**Defaults** N/A.

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A.

**Configuration** The following example displays the output of the **show arp timeout** command:

**Examples**

```
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	Command	Description
Commands	N/A.	N/A.

**Platform Description** N/A

## 2.28 show ip arp

Use this command to display the Address Resolution Protocol (ARP) cache table.

**show ip arp [vrf vrf-name]**

Parameter	Parameter	Description
Description	vrf-name	VRF 实例，显示指定 VRF 的 ARP 表项。

**Defaults** N/A.

**Command Mode** Privileged EXEC mode.

**Usage Guide** N/A.

**Configuration** The following example displays the output of **show ip arp**:

**Examples**

```
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	Parameter	Description
Description	<i>vrf-name</i>	VRF name. All global IPv6 neighbors are cleared without specified VRF name by default.
	<b>oob</b>	Clears the dynamic IPv6 neighbors discovered by neighbors on MGMT interface.
	<i>interface-id</i>	Interface name. Clear the dynamically learned IPv6 neighbors on the specified interface.

**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 the interface gigabitEthernet 0/1.

```
Ruijie# clear ipv6 neighbors gigabitEthernet 0/1
```

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	Parameter	Description
Description	<i>ipv6-prefix</i>	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.
	<i>ipv6-address</i>	<b>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.</b>
	<i>prefix-length</i>	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.
	<i>prefix-name</i>	The general prefix name. Use the specified general prefix to generate the interface address.
	<i>sub-bits</i>	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.
	<i>eui-64</i>	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**.

#### Configuration

```
Ruijie(config-if)# ipv6 address 2001:1::1/64
```

#### Examples

```
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

N/A

#### Description

## 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
<b>default</b>	(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

```
Ruijie(config-if)# ipv6 address autoconfig default
```

#### Examples

```
Ruijie(config-if)# no ipv6 address autoconfig
```

#### Related

Command	Description
---------	-------------

<b>Commands</b>	<b>ipv6 address ipv6-prefix/prefix-length [ eui-64 ]</b>	Configures the IPv6 address for the interface manually.
<b>Platform</b>	N/A	
<b>Description</b>		

### 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	Parameter	Description
<b>Description</b>	<i>milliseconds</i>	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.
	<i>bucket-size</i>	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** N/A

**Description**

### 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 Examples** Ruijie(config-if)# **ipv6 enable**

Related Commands	Command	Description
	<b>show ipv6 interface</b>	Displays the related information of an interface.

**Platform** N/A

**Description**

## 3.6 ipv6 gateway

Use this command to configure the default gateway IPv6 address on the management port.

**ipv6 gateway *ipv6-address***

Parameter	Parameter	Description
Description	<i>ipv6-address</i>	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	<i>prefix-name</i>	The general prefix name.
	<i>pv6-prefix</i>	The network prefix value of the general-prefix following the format defined in RFC4291.
	<i>prefix-length</i>	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** The following example configures manually a general prefix as my-prefix.

**Examples** 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** N/A

**Description**

## 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	Parameter	Description
Description	<i>value</i>	Hop count ranging from 1 to 255.

**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** N/A

**Description**

### 3.9 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	Parameter	Description
Description	<i>bytes</i>	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
	<b>mtu</b>	Sets the MTU of an interface.

**Platform Description** This command cannot be used on Layer 2 devices.

### 3.10 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	Parameter	Description
Description	<i>value</i>	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

### 3.11 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
	<i>value</i>	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** Ruijie(config-if)# ipv6 nd dad attempts 3

#### Examples

Related	Command	Description
Commands	show ipv6 interface	Displays the interface information.

**Platform** N/A

#### Description

## 3.12 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	Parameter	Description
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** The following example sets the interval for address conflict detection to 10s.

**Examples** Ruijie(config)# ipv6 nd dad retry 10

Related	Command	Description
Commands	N/A	N/A

**Platform** N/A

#### Description

### 3.13 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	Parameter	Description
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	Command	Description
Commands	<b>show ipv6 interface</b>	Displays the interface information.
	<b>ipv6 nd other-config-flag</b>	Sets the flag for obtaining all information except IP address through stateful auto configuration.

**Platform** N/A

**Description**

### 3.14 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	Parameter	Description
Description	<i>milliseconds</i>	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(config-if)# ipv6 nd ns-interval 2000

Related Commands	Command	Description
	show ipv6 interface	Displays the interface information.

**Platform Description** N/A

### 3.15 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

### 3.16 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 { infinite | preferred-lifetime } ] |
[ at valid-date preferred-date ] | [ infinite { infinite | preferred-lifetime } ] ] [ no-advertise ] |
[ [ off-link ] [ no-autoconfig ] ]
no ipv6 nd prefix { ipv6-prefix/prefix-length | default }
```

Parameter	Parameter	Description
Description	<i>ipv6-prefix</i>	IPv6 network ID following the format defined in RFC4291
	<i>prefix-length</i>	Length of the IPv6 prefix. "/" shall be added in front of the prefix
	<i>valid-lifetime</i>	Valid lifetime of the RA prefix received by the host
	<i>preferred-lifetime</i>	Preferred lifetime of the RA prefix received by the host
	<i>at valid-date preferred-date</i>	Sets the dead line for the valid lifetime and that of the preferred lifetime, in day, month, year, hour, minute.
	<b>infinite</b>	Indicates that the prefix is always valid.
	<b>default</b>	Sets the default prefix.
	<b>no-advertise</b>	The prefix will not be advertised by the device.
	<b>off-link</b>	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.
	<b>no-autoconfig</b>	Indicates that the RA prefix received by the host cannot be used for auto address configuration.

**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),

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** The following example adds a prefix for SVI 1.

**Examples**

```
Ruijie(config)# interface vlan 1
Ruijie(config-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	Command	Description
Commands	<b>show ipv6 interface</b>	Displays the RA information of an interface.

**Platform** N/A

**Description**

### 3.17 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	Parameter	Description
Description	<i>value</i>	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
	<b>show ipv6 interface</b>	Displays the interface information.
	<b>ipv6 nd ra-lifetime</b>	Sets the lifetime of the device.
	<b>ipv6 nd ra-interval</b>	Sets the interval of sending the RA message.
	<b>ipv6 nd ra-mtu</b>	Sets the MTU of the RA message.

Platform N/A

Description

### 3.18 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-interval**

Parameter Description	Parameter	Description
	<i>seconds</i>	Interval of sending the RA message in seconds, 3-1800s.
	<b>min-max</b>	Maximum and minimum interval sending the RA message in seconds
	<i>min_value</i>	Minimum interval sending the RA message in seconds
	<i>max_value</i>	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(config-if)# ipv6 nd ra-interval 110
Ruijie(config-if)# ipv6 nd ra-interval min-max 110 120
```

Related Commands	Command	Description
	<b>show ipv6 interface</b>	Displays the interface information.
	<b>ipv6 nd ra-lifetime</b>	Sets the lifetime of the device.
	<b>ipv6 nd ra-hoplimit</b>	Sets the hopfcount of the RA message.
	<b>ipv6 nd ra-mtu</b>	Sets the MTU of the RA message.

**Platform** N/A  
**Description**

### 3.19 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	Parameter	Description
Description	<i>seconds</i>	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(config-if)# ipv6 nd ra-lifetime 2000
```

Related Commands	Command	Description
	<b>show ipv6 interface</b>	Displays the interface information.
	<b>ipv6 nd ra-interval</b>	Sets the interval of sending the RA.
	<b>ipv6 nd ra-hoplimit</b>	Sets the hopcount of the RA.
	<b>ipv6 nd ra-mtu</b>	Sets the MTU of the RA.

**Platform** N/A  
**Description**

### 3.20 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	Parameter	Description										
Description	<i>value</i>	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	<pre>Ruijie(config -if)# ipv6 nd ra-mtu 1400</pre>											
Related Commands	<table><tr><th>Command</th><th>Description</th></tr><tr><td><b>show ipv6 interface</b></td><td>Displays the interface information.</td></tr><tr><td><b>ipv6 nd ra-lifetime</b></td><td>Sets the lifetime of the device.</td></tr><tr><td><b>ipv6 nd ra-interval</b></td><td>Sets the interval of sending the RA message.</td></tr><tr><td><b>ipv6 nd ra-hoplimit</b></td><td>Sets the hopcount of the RA message.</td></tr></table>	Command	Description	<b>show ipv6 interface</b>	Displays the interface information.	<b>ipv6 nd ra-lifetime</b>	Sets the lifetime of the device.	<b>ipv6 nd ra-interval</b>	Sets the interval of sending the RA message.	<b>ipv6 nd ra-hoplimit</b>	Sets the hopcount of the RA message.	
Command	Description											
<b>show ipv6 interface</b>	Displays the interface information.											
<b>ipv6 nd ra-lifetime</b>	Sets the lifetime of the device.											
<b>ipv6 nd ra-interval</b>	Sets the interval of sending the RA message.											
<b>ipv6 nd ra-hoplimit</b>	Sets the hopcount of the RA message.											
Platform	N/A											
Description												

### 3.21 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	Parameter	Description
Description	<i>milliseconds</i>	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	<p>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.</p> <p>The configured value will be advertised through RA and will be used by the device itself. If the value is</p>	

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`

#### Examples

Related Commands	Command	Description
	<code>show ipv6 interface</code>	Displays the interface information.

**Platform** N/A

**Description**

## 3.22 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 state-time** *seconds*

**no ipv6 nd state-time**

Parameter Description	Parameter	Description
	<i>Seconds</i>	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.

**Examples** `Ruijie(config)# ipv6 nd state-time 600`

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 3.23 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	Parameter	Description
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
	<b>show ipv6 interface</b>	Displays the interface information.

**Platform Description** N/A

## 3.24 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	Parameter	Description
Description	<i>number</i>	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** The following example sets the maximum number of the unresolved neighbor table entries to 200.

**Examples** Ruijie(config)# ipv6 nd unresolved 200

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 3.25 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
	<i>ipv6-address</i>	The neighbor IPv6 address, in the form as defined in RFC4291.
	<i>interface-id</i>	Specifies the network interface where the neighbor is (including Router Port, L3 AP port and SVI interface).
	<i>hardware-address</i>	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** The following example configures a static neighbor on SVI 1.

**Examples** Ruijie(config)# ipv6 neighbor 2001::1 vlan 1 00d0.f811.1111

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 3.26 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 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** N/A

**Description**

## 3.27 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	Parameter	Description
Description	N/A	N/A
Defaults	This function is enabled by default.	
Command Mode	Interface configuration mode.	
Usage Guide	The transmission rate of any ICMPv6 error message is limited. By default, it is 10pps.	
Configuration Examples	The following example enables ICMPv6 redirection on interface GigabitEthernet 0/1. <pre>Ruijie(config-if-GigabitEthernet 0/1)# ipv6 redirects</pre>	
Related Commands	Command	Description
	show ipv6 interface	Displays the interface information.
Platform Description	N/A	

## 3.28 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**

<b>Parameter</b>	<b>Parameter</b>	<b>Description</b>
<b>Description</b>	N/A	N/A
<b>Defaults</b>	The <b>ipv6 source-route</b> command is disabled by default.	
<b>Command Mode</b>	Global configuration mode.	
<b>Usage Guide</b>	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.	
<b>Configuration Examples</b>	<pre>Ruijie(config)# no ipv6 source-route</pre>	

Related Commands	Command	Description
	N/A	N/A

Platform N/A

Description

## 3.29 show ipv6 address

Use this command to display the IPv6 addresses.

**show ipv6 address** [ *interface-name* ]

Parameter Description	Parameter	Description
	<i>interface-name</i>	Interface name

Defaults N/A

Command Privileged EXEC mode.  
Mode

Usage Guide N/A

Configuration The following example displays all IPv6 address configured on the device.

### Examples

```
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** N/A

**Description**

### 3.30 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** N/A

**Description**



### 3.31 show ipv6 interface

Use this command to display the IPv6 interface information.

**show ipv6 interface** [ *interface-id* ] [ **ra-info** ] [ **brief** [ *interface-id* ] ]

Parameter	Parameter	Description
Description	<i>interface-id</i>	Interface (including Ethernet interface, aggregate port, or SVI)
	<b>ra-info</b>	Displays the RA information of the interface.
	<i>brief</i>	Displays the brief information of the interface (interface status and address information).

**Defaults** N/A

**Command Mode** Privileged EXEC mode.

**Usage Guide** Use this command to display the address configuration, ND configuration and other information of an IPv6 interface.

**Configuration** The following example displays the information of the IPv6 interface.

**Examples**

```
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	

### 3.32 show ipv6 neighbors

Use this command to display the IPv6 neighbors.

**show ipv6 neighbors** [ *vrf vrf-name* ] [ **verbose** ] [ *interface-id* ] [ *ipv6-address* ] [ **static** ] [ **oob** ]

Parameter	Parameter	Description
Description	<i>vrf-name</i>	VRF name
	<b>verbose</b>	Displays the neighbor details.
	<i>interface-id</i>	Displays the neighbors of the specified interface.
	<i>ipv6-address</i>	Displays the neighbors of the specified IPv6 address.
	<b>static</b>	Displays the validity status of static neighbors.
	<b>oob</b>	Displays the dynamic IPv6 neighbors discovered by neighbors on MGMT interface.

**Defaults** N/A

**Command Mode** Privileged EXEC mode.

**Usage Guide** N/A

**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:

	<p>INCOMP (Incomplete): The address resolution of the neighbor is underway, the NS is sent, but the NA is not received.</p> <p>REACH (Reachable): The switch is connected with the neighbor. In this state, the switch takes no additional action when sending packets to the neighbor.</p> <p>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.</p> <p>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.</p> <p>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).</p> <p>?: Unknown state.</p> <p>/R—indicate the neighbor is considered as a device</p> <p>/H: The neighbor is a host.</p>
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
<b>ipv6 neighbor</b>	Configures a neighbor.

**Platform  
Description**

N/A

### 3.33 show ipv6 neighbors statistics

Use the following commands to display the statistics of one IPv6 neighbors.

**show ipv6 neighbors [ vrf vrf-name ] statistics [ all ]**

Use the following command to show the statistics of all IPv6 neighbors.

**show ipv6 neighbors statistics all**

**Parameter  
Description**

Parameter	Description
<i>vrf-name</i>	VRF name

**Defaults**

N/A

**Command** Privileged EXEC mode.

**Mode**

**Usage Guide** N/A

**Configuration** The following example displays the statistics of the global neighbors.

**Examples**

```
Ruijie#show ipv6 neighbor statistics
```

```
Memory: 0 bytes
```

```
Entries: 0
```

```
Static: 0,Dynamic: 0,Local: 0
```

```
Incomplete:0, Reachable:0, Stale:0, Delay:0, Probe:0
```

```
Ruijie#
```

The following example displays the statistics of all IPv6 neighbors.

```
Ruijie#show ipv6 neighbor statistics all
```

```
IPv6 neighbor table count: 1
```

```
Static neighbor count: 0(0 active, 0 inactive)
```

```
Total
```

```
Memory: 0 bytes
```

```
Entries: 0
```

```
Static: 0,Dynamic: 0,Local: 0
```

```
Incomplete:0, Reachable:0, Stale:0, Delay:0, Probe:0;
```

```
Global
```

```
Memory: 0 bytes
```

```
Entries: 0
```

```
Static: 0,Dynamic: 0,Local: 0
```

```
Incomplete:0, Reachable:0, Stale:0, Delay:0, Probe:0;
```

```
Ruijie#
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** Supported on all platforms.

**Description**

## 3.34 show ipv6 packet statistics

Use this command to display the statistics of IPv6 packets.

**show ipv6 packet statistics [ total | *interface-name* ]**

Parameter	Parameter	Description
Description	<b>total</b>	Displays total statistics of all interfaces.
	<i>interface-name</i>	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 interface.

```
Ruijie#show ipv6 pack statistics
Total
  Received 0 packets, 0 bytes
    Unicast:0,Multicast:0
  Discards:0
    HdrErrors:0 (HoplimitExceeded:0,Others:0)
    NoRoutes:0
    Others:0
  Sent 0 packets, 0 bytes
    Unicast:0,Multicast:0
GigabitEthernet 0/5
  Received 0 packets, 0 bytes
    Unicast:0,Multicast:0
  Discards:0
    HdrErrors:0 (HoplimitExceeded:0,Others:0)
    NoRoutes:0
    Others:0
  Sent 0 packets, 0 bytes
    Unicast:0,Multicast:0
Ruijie#
```

The following example displays the total statistics of the IPv6 packets.

```
Ruijie#show ipv6 pack statistics total
Total
  Received 0 packets, 0 bytes
    Unicast:0,Multicast:0
  Discards:0
    HdrErrors:0 (HoplimitExceeded:0,Others:0)
    NoRoutes:0
    Others:0
  Sent 0 packets, 0 bytes
    Unicast:0,Multicast:0
```

```
Ruijie#
```

Related Commands	Command	Description
	N/A	N/A

**Platform** Supported on all platforms.

**Description**

### 3.35 show ipv6 raw-socket

Use this command to display all IPv6 raw sockets.

**show ipv6 raw-socket [ num ]**

Parameter Description	Parameter	Description
	<i>num</i>	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** N/A

**Description**



### 3.36 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	Parameter	Description
Description	<i>interface-type</i> <i>interface-number</i>	( 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** The following example displays the IPv6 router

**Examples**

```
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	Command	Description
Commands	N/A	N/A

**Platform Description** N/A

### 3.37 show ipv6 sockets

Use this command to display all IPv6 sockets.

**show ipv6 sockets**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode.

**Usage Guide** N/A

**Configuration** The following example displays all IPv6 sockets.

**Examples**

```
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** N/A

**Description**

## 3.38 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	Parameter	Description
Description	<b>local-port</b> <i>num</i>	Local port number.
	<b>peer-port</b> <i>num</i>	Peer port number.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays all IPv6 UDP sockets.

<b>Examples</b>	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
	<b>Filed</b>		<b>Description</b>	
	Number		Number.	
	Local Address		Local IPv6 address and port.	
	Peer Address		Peer IPv6 address and port.	
	Process name		Process name.	

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	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	Parameter	Description
Description	<i>low-ip-address</i>	Start address in the network segment range.
	<i>high-ip-address</i>	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
	<b>ip dhcp pool</b>	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.
	<b>class</b>	Configures the CLASS associated with the DHCP address pool and enters the address pool CLASS configuration mode.

**Platform Description** N/A

## 4.2 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	Parameter	Description
Description	<i>file-name</i>	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
	<b>ip dhcp pool</b>	Defines the name of the DHCP address pool and enter the DHCP address pool configuration mode.
	<b>next-server</b>	Configures the next server IP address of the DHCP client startup process.

**Platform Description** N/A

## 4.3 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	Parameter	Description
Description	<i>class-name</i>	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** DHCP address pool configuration mode

**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
<b>ip dhcp pool</b>	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.

**Platform** N/A

**Description**

## 4.4 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.
<i>ip-address</i>	Deletes the binding of the specified IP addresses.

**Defaults** N/A.

**Command** Privileged EXEC mode.

**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** The following example clears the DHCP binding with the IP address 192.168.12.100.

**Examples**

```
clear ip dhcp binding 192.168.12.100
```

Related Commands	Command	Description
	<b>show ip dhcp binding</b>	Displays the address binding of the DHCP server.

**Platform** N/A

**Description**

## 4.5 clear ip dhcp conflict

Use this command to clear the DHCP address conflict record.

**clear ip dhcp conflict** { \* | *ip-address* }

Parameter Description	Parameter	Description
	*	Deletes all DHCP address conflict records.
	<i>ip-address</i>	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** The following example clears all address conflict records.

**Examples**

```
clear ip dhcp conflict *
```

Related Commands	Command	Description
	<b>ip dhcp ping packets</b>	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.
	<b>show ip dhcp conflict</b>	Displays the address conflict that the DHCP server detects when it assigns an IP address.

**Platform** N/A

**Description**

## 4.6 clear ip dhcp history

Use this command to clear the address assigned by the DHCP server.

**clear ip dhcp history**{ \* | *mac-address* }

Parameter	Parameter	Description
Description	*	Clears all addresses assigned by the DHCP server.
	<i>mac-address</i>	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 Examples** The following example clears all addresses assigned by the DHCP server.

```
Ruijie# clear ip dhcp history *
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 4.7 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	Parameter	Description
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** The following example clears statistics about the packet processing rate of every module.

**Examples** Ruijie# clear ip dhcp server rate

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 4.8 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** The following example clears the statistics record of the DHCP server.

**Examples** clear ip dhcp server statistics

Related Commands	Command	Description
	show ip dhcp server statistics	Displays the statistics record of the DHCP server.

**Platform** N/A

**Description**

## 4.9 clear ip dhcp relay statistics

Use this command to clear the DHCP relay statistics.

**clear ip dhcp relay statistics**

Parameter	Parameter	Description

Description	N/A	N/A
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.	
	<pre>Ruijie# clear ip dhcp relay statistics</pre>	
Related Commands	Command	Description
	N/A	N/A
Platform Description	N/A	

## 4.10 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** or **default** form of this command to restore the default setting.

**client-identifier** *unique-identifier*

**no client-identifier**

**default client-identifier**

<b>Parameter Description</b>	<table border="1"> <thead> <tr> <th>Parameter</th><th>Description</th></tr> </thead> <tbody> <tr> <td><i>unique-identifier</i></td><td>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.</td></tr> </tbody> </table>	Parameter	Description	<i>unique-identifier</i>	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.
Parameter	Description				
<i>unique-identifier</i>	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.				
<b>Defaults</b>	N/A.				
<b>Command Mode</b>	DHCP address pool configuration mode.				
<b>Usage Guide</b>	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
<b>hardware-address</b>	Defines the hardware address of DHCP client.
<b>host</b>	Defines the IP address and network mask, which is used to configure the DHCP manual binding.
<b>ip dhcp pool</b>	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.

**Platform** N/A  
**Description**

## 4.11 client-name

Use this command to define the name of the DHCP client in the DHCP address pool configuration mode. Use the **no** or **default** form of this command to restore the default setting.

**client-name** *client-name*

**no client-name**

**default 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.

```
client-name river
```

Related Commands	Command	Description
	<b>host</b>	Defines the IP address and network mask, which is used to configure the DHCP manual binding.
	<b>ip dhcp pool</b>	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.

**Platform** N/A

**Description**

## 4.12 default-router

Use this command to define the default gateway of the DHCP client in the DHCP address pool configuration mode. Use the **no** or **default** form of this command to restore the default setting.

**default-router** *ip-address* [ *ip-address2...ip-address8* ]

**no default-router**

**default default-router**

Parameter Description	Parameter	Description
	<i>ip-address</i>	Defines the IP address of the equipment. It is required to configure one IP address at least.
	<i>ip-address2...ip-address8</i>	(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
	<b>ip dhcp pool</b>	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.

**Platform** N/A

**Description**

## 4.13 dns-server

Use this command to define the DNS server of the DHCP client in the DHCP address pool configuration mode. Use the **no** or **default** form of this command to restore the default setting.

**dns-server** *ip-address* [ *ip-address2...ip-address8* ]

**no dns-server**

**default dns-server**

Parameter	Parameter	Description
Description	<i>ip-address</i>	Defines the IP address of the DNS server. At least one IP address should be configured.
	<i>ip-address2...ip-address8</i>	(Optional) Up to 8 DNS servers can be configured.

**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 priority, 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
	<b>domain-name</b>	Defines the suffix domain name of the DHCP client.
	<b>ip address dhcp</b>	Enables the DHCP client on the interface to obtain the IP address information.
	<b>ip dhcp pool</b>	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.

**Platform Description** N/A

## 4.14 domain-name

Use this command to define the suffix domain name of the DHCP client in the DHCP address pool configuration mode. Use the **no** form of this command to restore the default setting.

**domain-name** *domain-name*

**no domain-name**

Parameter	Parameter	Description
-----------	-----------	-------------

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	The following example defines the suffix domain name i-net.com.cn for the DHCP client.							
Examples	Ruijie (dhcp-config) #domain-name ruijie.com.cn							
Related Commands	<table><tr><th>Command</th><th>Description</th></tr><tr><td>dns-server</td><td>Defines the DNS server of the DHCP client.</td></tr><tr><td>ip dhcp pool</td><td>Defines the name of the DHCP address pool and enter the DHCP address pool configuration mode.</td></tr></table>		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.
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	N/A							
Description								

## 4.15 hardware-address

Use this command to define the hardware address of the DHCP client in the DHCP address pool configuration mode. Use the **no** or **default** form of this command to restore the default setting.

**hardware-address** *hardware-address* [ *type* ]

**no hardware-address**

**default hardware-address**

<b>Parameter Description</b>	Parameter	Description
	<i>hardware-address</i>	Define the MAC address of the DHCP client.
	<i>type</i>	<p>To indicate the hardware platform protocol of the DHCP client, use the string definition or digits definition.</p> <p>String option:</p> <p>Ethernet</p> <p>ieee802</p> <p>Digits option:</p> <p>1 (10M Ethernet)</p> <p>6 (IEEE 802)</p>

**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** The following example defines the MAC address 00d0.f838.bf3d with the type ethernet.

**Examples** `hardware-address 00d0.f838.bf3d`

Related Commands	Command	Description
	<b>client-identifier</b>	Defines the unique ID of the DHCP client (Indicated by the hexadecimal numeral, separated by dot).
	<b>host</b>	Defines the IP address and network mask, which is used to configure the DHCP manual binding.
	<b>ip dhcp pool</b>	Defines the name of the DHCP address pool and enter the DHCP address pool configuration mode.
	<b>default-router</b>	Defines the default route of the DHCP client.

**Platform** N/A  
**Description**

## 4.16 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** or **default** form of this command to restore the default setting.

**host** *ip-address* [*netmask*]

**no host**

**default host**

Parameter Description	Parameter	Description
	<b>host</b> <i>ip-address</i>	Defines the IP address of DHCP client.
	<i>netmask</i>	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** The following example sets the client IP address as 192.168.12.91, and the network mask as 255.255.255.240.

**Examples**

```
host 192.168.12.91 255.255.255.240
```

Related Commands	Command	Description
	<b>client-identifier</b>	Defines the unique ID of the DHCP client (Indicated in hex and separated by dot).
	<b>hardware-address</b>	Defines the hardware address of DHCP client.
	<b>ip dhcp pool</b>	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.
<b>default-router</b>	Define the default route of the DHCP client.	<b>default-router</b>

**Platform** N/A

**Description**

## 4.17 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** or **default** form of this command to restore the default setting.

**ip address dhcp**

**no ip address dhcp**

**default ip address dhcp**

Parameter	Parameter	Description
<b>Description</b>	N/A	N/A

**Defaults** The interface cannot obtain the IP 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** The following example makes the FastEthernet 0 port obtain the IP address automatically.

**Examples**

```
Ruijie(config)# interface GigabitEthernet 0/1
```



```
Ruijie(config-if-GigabitEthernet 0/1) ip address dhcp
```

Related Commands	Command	Description
	<b>dns-server</b>	Defines the DNS server of DHCP client.
	<b>ip dhcp pool</b>	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.

**Platform** N/A

**Description**

## 4.18 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
	<i>class-name</i>	Class name, which can be character string or numeric such as myclass or 1.

**Defaults** By default, the class is not configured.

**Command Mode** Global configuration 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** N/A

**Description**

## 4.19 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** or **default** 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*]  
**default ip dhcp excluded-address** *low-ip-address* [*high-ip-address*]

Parameter	Parameter	Description
Description	<i>low-ip-address</i>	Excludes the IP address, or excludes the start IP address within the range of the IP address.
	<i>high-ip-address</i>	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 Commands	Command	Description
	<b>ip dhcp pool</b>	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.
	<b>network (DHCP)</b>	Defines the network number and network mask of the DHCP address pool.

**Platform** N/A  
**Description**

## 4.20 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	Parameter	Description
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 a 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.

**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

## 4.21 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** or **default** 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**  
**default 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** The following example enables the DHCP Server to monitor the status of VRRP interfaces.

**Examples** Ruijie(config-if)# ip dhcp monitor-vrrp-state

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 4.22 ip dhcp ping packets

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** or **default** form of this command to restore the default setting.

**ip dhcp ping packets** [ *number* ]

**no ip dhcp ping packets**

**default ip dhcp ping packets**

Parameter Description	Parameter	Description
	<i>number</i>	(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** The following example sets the number of the packets sent by the ping operation as 3.

**Examples** ip dhcp ping packets 3

Related Commands	Command	Description
	<b>clear ip dhcp conflict</b>	Clears the DHCP history conflict record.
	<b>ip dhcp ping packet</b>	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.
	<b>show ip dhcp conflict</b>	Displays the DHCP server detects address conflict when it assigns

	an IP address.
--	----------------

**Platform** N/A

**Description**

## 4.23 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** or **default** form of this command to restore the default setting.

**ip dhcp ping timeout** *milli-seconds*

**no ip dhcp ping timeout**

**default ip dhcp ping timeout**

Parameter	Parameter	Description
<b>Description</b>	<i>milli-seconds</i>	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
	<b>clear ip dhcp conflict</b>	Clears the DHCP history conflict record.
	<b>ip dhcp ping packets</b>	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.
	<b>show ip dhcp conflict</b>	Displays the address conflict the DHCP server detects when it assigns an IP address.

**Platform** N/A

**Description**

## 4.24 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** or **default** form of this command to

restore the default setting.

**ip dhcp pool** *pool-name*

**no ip dhcp pool** *pool-name*

**default ip dhcp pool** *pool-name*

Parameter	Parameter	Description
Description	<i>pool-name</i>	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
	<b>host</b>	Defines the IP address and network mask, which is used to configure the DHCP manual binding.
	<b>ip dhcp excluded-address</b>	Defines the IP addresses that the DHCP server cannot assign to the clients.
	<b>network (DHCP)</b>	Defines the network number and network mask of the DHCP address pool.

**Platform** N/A

**Description**

## 4.25 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	Parameter	Description
Description	N/A	N/A

**Defaults** The **ip dhcp relay check server-id** command is disabled.

**Command** Global configuration mode.

**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** The following example enables the ip dhcp relay check server-id function.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp relay check server-id
```

Related Commands	Command	Description
	service dhcp	Enables the DHCP Relay.

**Platform** N/A

**Description**

## 4.26 ip dhcp relay information option82

Use this command 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 Description	Parameter	Description
	N/A	N/A

**Defaults** The **ip dhcp relay information option82** command is disabled.

**Command** Global configuration mode.

**Mode**

**Usage Guide** This command is exclusive with the **option dot1x** command.

**Configuration** The following example enables the option82 function on the DHCP relay.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# Ip dhcp relay information option82
```

Related Commands	Command	Description
	service dhcp	Enables the DHCP Relay.

**Platform** N/A

**Description**

## 4.27 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	Parameter	Description
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
	<b>service dhcp</b>	Enables the DHCP Relay.

**Platform Description** N/A

## 4.28 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	Parameter	Description
Description	N/A	N/A

**Defaults** Enabled



**Command** This function is enabled by default.

**Mode**

**Usage Guide** N/A

**Configuration** The following example enables the CLASS to allocate addresses.

**Examples** Ruijie(config)# ip dhcp use class

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 4.29 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 { cycle-mode | [ vrf {vrf-name}] A.B.C.D }**

**no ip helper-address { cycle-mode | [ vrf {vrf-name}] A.B.C.D }**

Parameter Description	Parameter	Description
	<b>cycle-mode</b>	Forwards all DHCP request packets to all DHCP servers.
	<b>vrf {vrf-name}</b>	Specifies vrf of the server.
	<b>A.B.C.D</b>	Specifies the address of the DHCP server.

**Defaults** N/A

**Command** Global configuration mode, interface configuration mode.

**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** The following example configures the addresses for two servers.

**Examples**

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  
Commands**

Command	Description
<b>service dhcp</b>	Enables the DHCP relay.

**Platform**

N/A

**Description**

## 4.30 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
<i>days</i>	Lease time in days
<i>hours</i>	(Optional) Lease time in hours. It is necessary to define the days before defining the hours.
<i>minutes</i>	(Optional) Lease time in minutes. It is necessary to define the days and hours before defining the minutes.
<i>infinite</i>	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**

The following example sets the DHCP lease to 1 hour.

**Examples**

```
lease 0 1
```

The following example sets the DHCP lease to 1 minute.

```
lease 0 0 1
```

**Related**

Command	Description
---------	-------------

Commands	<b>ip dhcp pool</b>	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.

Platform N/A

Description

## 4.31 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*

**default lease-threshold**

**no lease-threshold**

Parameter	Parameter	Description
Description	<i>percentage</i>	Usage of the address pool, ranging from 60 to 100 in percentage.

Defaults 90

Command DHCP address pool configuration mode.  
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** The following example sets the alarm threshold to 80%.

**Examples** `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	<b>Command</b>	<b>Description</b>
	<b>ip dhcp pool</b>	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.

Platform N/A

Description

## 4.32 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	Parameter	Description
Description	<i>ip-address</i>	IP address of the WINS server. It is required to configure one IP address at least.
	<i>ip-address2...ip-address8</i>	(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 priority. 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	Command	Description
Commands	<b>ip address dhcp</b>	Enables the DHCP client on the interface to obtain the IP address.
	<b>ip dhcp pool</b>	Defines the name of the DHCP address pool and enter the DHCP address pool configuration mode.
	<b>netbios-node-type</b>	Defines the netbios node type of the client host.

**Platform** N/A

**Description**

## 4.33 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** or **default** form of this command to restore the default setting.

**netbios-node-type** *type*

**no netbios-node-type**

**default netbios-node-type**

Parameter	Parameter	Description
Description	<i>type</i>	<p>Type of node in two modes:</p> <p>Digit in hexadecimal form in the range of 0 to FF. Only the following numerals are available:</p> <p>1: b-node.</p> <p>2: p-node.</p> <p>4: m-node.</p> <p>8: h-node.</p> <p>String:</p> <p>b-node: broadcast node</p> <p>p-node: peer-to-peer node</p> <p>m-node: mixed node</p> <p>h-node: hybrid node</p>

**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
	<b>ip dhcp pool</b>	Defines the name of DHCP address pool and enters the DHCP address pool configuration mode.
	<b>netbios-name-server</b>	Configures the WINS name server of the Microsoft DHCP client NETBIOS.

**Platform Description** N/A

## 4.34 network

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** or **default** form of this command to restore the default setting.

**network** *network-number net-mask* [ *low-ip-address high-ip-address* ]

**no network**

**default network**

Parameter	Parameter	Description
Description	<i>net-number</i>	Network number of the DHCP address pool
	<i>net-mask</i>	Network mask of the DHCP address pool. If the network mask is not defined, the natural network mask will be used by default.
	<i>low-ip-address</i>	Available start IP address
	<i>high-ip-address</i>	Available end IP address

**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
	<b>ip dhcp excluded-address</b>	Defines the IP addresses that the DHCP server cannot assign to the clients.
	<b>ip dhcp pool</b>	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.

**Platform Description** N/A

## 4.35 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** or **default** form of this command to restore the default setting.

**next-server** *ip-address* [*ip-address2...ip-address8*]

**no next-server**

**default next-server**

Parameter	Parameter	Description
Description	<i>ip-address</i>	Defines the IP address of the startup server, which is usually the TFTP server. It is required to configure one IP address at least.
	<i>ip-address2...ip-address8</i>	(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
	<b>bootfile</b>	Defines the default startup mapping file name of the DHCP client.
	<b>ip dhcp pool</b>	Defines the name of the DHCP address pool and enter the DHCP address pool configuration mode.
	<b>ip help-address</b>	Defines the Helper address on the interface.
	<b>option</b>	Configures the option of the RGOS software DHCP server.

**Platform Description** N/A

## 4.36 option

Use this command to configure the option of the DHCP server in the DHCP address pool configuration mode. Use the **no** or **default** form of this command to restore the default setting.

**option** *code* { **ascii** *string* | **hex** *string* | **ip** *ip-address* }

**no option**

**default option**

<b>Parameter Description</b>	Parameter	Description
	<i>code</i>	Defines the DHCP option codes.
	<i>ascii string</i>	Defines an ASCII string.
	<i>hex string</i>	Defines a hex string.
	<i>ip ip-address</i>	Defines an IP address list.
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Global configuration mode	
<b>Usage Guide</b>	<p>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.</p>	
<b>Configuration Examples</b>	<p>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.</p> <pre>Ruijie(dhcp-config)# option 19 hex 1</pre> <p>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.</p> <pre>option 33 ip 172.16.12.0 192.168.12.12 172.16.16.0 192.168.12.16</pre>	
<b>Related Commands</b>	Command	Description
	<b>ip dhcp pool</b>	Defines the name of the DHCP address pool and enters the DHCP address pool configuration mode.
<b>Platform Description</b>	N/A	

## 4.37 pool-status

Use this command to enable or disable the DHCP address pool.

**pool-status { enable | disable }**

Parameter	Parameter	Description
-----------	-----------	-------------



<b>Description</b>	<b>enable</b>	Enables the address pool.
	<b>disable</b>	Disables the address pool.
<b>Defaults</b>	By default, the address pool is enabled after it is configured.	
<b>Command Mode</b>	DHCP address pool configuration mode	
<b>Usage Guide</b>	This command is configured on the DHCP server.	
<b>Configuration Examples</b>	The following example disables the address pool.	
<b>Examples</b>	<pre>Ruijie(dhcp-config)# pool-status disable</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	N/A	N/A
<b>Platform Description</b>	N/A	

## 4.38 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**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	N/A	N/A
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Global CLASS configuration mode	
<b>Usage Guide</b>	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.	
<b>Configuration Examples</b>	The following example configures a global CLASS and enters the Option82 matching information configuration mode.	
	<pre>Ruijie(config)# ip dhcp class myclass Ruijie(config-dhcp-class)# relay agent information</pre>	

```
Ruijie(config-dhcp-class-relayinfo)#
```

Related	Command	Description
Commands	<b>ip dhcp class</b>	Defines a CLASS and enters the global CLASS configuration mode.

Platform N/A

Description

## 4.39 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	Parameter	Description
Description	<i>aabb.ccdd.eeff...[*]</i>	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 Global CLASS configuration mode  
Mode

Usage Guide N/A

Configuration The following example configures a global CLASS which can match multiple Option82 information.

Examples

```
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	Command	Description
Commands	<b>ip dhcp class</b>	Defines a CLASS and enter the global CLASS configuration mode.
	<b>relay agent information</b>	Enters the Option82 matching information configuration mode.

**Platform** N/A  
**Description**

## 4.40 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	Parameter	Description
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
	<b>ip dhcp class</b>	Defines a CLASS and enter the global CLASS configuration mode.

**Platform** N/A  
**Description**

## 4.41 service dhcp

Use this command to enable the DHCP server and the DHCP relay on the device in global configuration mode. Use the **no** or **default** form of this command to restore the default setting.

**service dhcp**

**no service dhcp**

**default service dhcp**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** The **service dhcp** command is disabled.

**Command** Global configuration mode  
**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** The following example enables the DHCP server and the DHCP relay feature.

**Examples**

```
service dhcp
```

Related Commands	Command	Description
	<b>show ip dhcp server statistics</b>	Displays various statistics information of the DHCP server.
	<b>ip helper-address [ vrf ] A.B.C.D</b>	Adds an IP address of the DHCP server.

**Platform** N/A  
**Description**

## 4.42 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** Privileged EXEC mode.  
**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** The following example displays the result of the show dhcp lease.

**Examples**

```
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** N/A  
**Description**

## 4.43 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
	<i>ip-address</i>	(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
	<b>clear ip dhcp binding</b>	Clears the DHCP address binding table.

**Platform** N/A  
**Description**

## 4.44 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
	<b>clear ip dhcp conflict</b>	Clears the DHCP conflict record.

**Platform** N/A

**Description**

## 4.45 show ip dhcp pool

Use this command to display the address statistics of an address pool.

**show ip dhcp pool** [ *poolname* ]

Parameter	Parameter	Description
Description	<i>poolname</i>	(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** The following example displays the output result of the **show ip dhcp pool** *poolname* command.

### Examples

```
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** N/A  
**Description**

## 4.46 show ip dhcp relay-statistics

Use this command to display the statistics of the DHCP relay.

**show ip dhcp relay-statistics**

Parameter	Parameter	Description
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

## 4.47 show ip dhcp server statistics

Use this command to display the statistics of the DHCP server.

**show ip dhcp server statistics**

Parameter	Parameter	Description
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
DHCPREQUESTTIMES        0
DHCPREQUESTSUCTIMES     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
	<b>clear ip dhcp server statistics</b>	Clears the DHCP server statistics.

**Platform** N/A  
**Description**

## 4.48 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** N/A  
**Description**

## 5 DHCPv6 Commands

### 5.1 clear ipv6 dhcp binding

Use this command to clear the DHCPv6 binding information.

**clear ipv6 dhcp binding** [ *ipv6-address* ]

Parameter	Parameter	Description
Description	<i>ipv6-address</i>	Sets the IPv6 address or the prefix.
Defaults	N/A	
Command Mode	Privileged EXEC mode	
Usage Guide	If the <i>ipv6-address</i> is not specified, all DHCPv6 binding information is cleared. If the <i>ipv6-address</i> is specified, the binding information for the specified address is cleared.	
Configuration	The following example clears the DHCPv6 binding information:	
Examples	Ruijie(config)# clear ipv6 dhcp binding	
Related	Command	Description
Commands	N/A	N/A
Platform	N/A	
Description		

### 5.2 clear ipv6 dhcp conflict

Use this command to clear the DHCPv6 address conflicts.

**clear ipv6 dhcp conflict** { *ipv6-address* / \* }

Parameter	Parameter	Description
Description	<i>ipv6-address</i>	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** The following example clears a DHCPv6 address conflict.

**Examples** Ruijie# clear ipv6 dhcp conflict 2008:50::2

Related Commands	Command	Description
	show ipv6 dhcp conflict	Displays address conflicts.

**Platform** N/A

**Description**

### 5.3 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	Parameter	Description
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** N/A

**Description**

## 5.4 clear ipv6 dhcp server statistics

Use this command to clear the DHCPv6 server statistics.

**clear ipv6 dhcp server statistics**

Parameter	Parameter	Description
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** The following example clears the DHCPv6 server statistics.

**Examples** Ruijie(config)# clear ipv6 dhcp server statistics

Related	Command	Description
Commands	N/A	N/A

**Platform** N/A  
**Description**

## 5.5 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	Parameter	Description
Description	<i>ipv6-address</i>	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** The following example configures the DNS server address.

**Examples** Ruijie(config-dhcp)# dns-server 2008:1::1

Related Commands	Command	Description
	<b>domain-name</b>	Sets the DHCPv6 domain name information.
	<b>ipv6 dhcp pool</b>	Sets a DHCPv6 pool.

**Platform** N/A

**Description**

## 5.6 domain-name

Use this command to set the domain name for the DHCPv6 server.

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

**domain-name** *domain*

**no domain-name** *domain*

Parameter Description	Parameter	Description
	<i>domain</i>	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** The following example sets the domain name for the DHCPv6 server to example.com.

**Examples** Ruijie(config-dhcp)# domain-name example.com

Related Commands	Command	Description
	<b>dns-server</b>	Sets the DHCPv6 DNS server list.
	<b>ipv6 dhcp pool</b>	Sets the DHCPv6 pool.

**Platform** N/A

**Description**

## 5.7 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 the default setting.

**iana-address prefix** *ipv6-prefix/prefix-length* [ **lifetime** { *valid-lifetime* | *preferred-lifetime* } ]



**no iana-address prefix**

Parameter	Parameter	Description
Description	<i>ipv6-prefix/prefix-length</i>	Sets the IPv6 prefix and prefix length.
	<b>lifetime</b>	Sets the lifetime of the address allocated to the client. With the keyword <b>lifetime</b> configured, both parameters <i>valid-lifetime</i> and <i>preferred-lifetime</i> shall be configured.
	<i>valid-lifetime</i>	Sets the valid lifetime of using the allocated address for the client.
	<i>preferred-lifetime</i>	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
	<b>ipv6 dhcp pool</b>	Sets the DHCPv6 pool.
	<b>show ipv6 dhcp pool</b>	Displays the DHCPv6 pool information.

**Platform** N/A  
**Description**

## 5.8 ipv6 dhcp pool

Use this command to set the DHCPv6 server pool.  
Use the **no** form of this command to restore the default setting.

**ipv6 dhcp pool** *poolname*  
**no ipv6 dhcp pool** *poolname*

Parameter	Parameter	Description
Description	<i>poolname</i>	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** The following example sets the DHCPv6 server pool.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# ipv6 dhcp pool pool1
Ruijie(config-dhcp)#
```

Related Commands	Command	Description
	<b>ipv6 dhcp server</b>	Enables the DHCPv6 server function on the interface.
	<b>show ipv6 dhcp pool</b>	Displays the DHCPv6 pool information.

**Platform Description** N/A

## 5.9 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
	<i>ipv6-address</i>	Sets the DHCPv6 relay destination address.
	<i>interface-type</i> <i>interface-number</i>	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
	<b>show ipv6 dhcp interface</b>	Displays the DHCPv6 interface information.

**Platform** N/A

**Description**

## 5.10 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
	<i>poolname</i>	Defines the DHCPv6 pool name.
	<b>rapid-commit</b>	Allows the two-message interaction process.
	<b>preference</b> <i>value</i>	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.

 This command is supported on Layer 3 interfaces.

**Configuration** The following example enables the DHCPv6 server on the interface.

**Examples**

```
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ipv6 dhcp server pool1
```

Related Commands	Command	Description
	<b>ipv6 dhcp pool</b>	Sets the DHCPv6 pool.
	<b>show ipv6 dhcp pool</b>	Displays the DHCPv6 pool information.

**Platform** N/A  
**Description**

## 5.11 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
	<i>poolname</i>	The local prefix pool name
	<i>prefix/prefix-length</i>	The prefix and prefix length
	<i>assigned-length</i>	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** The following example configures the local prefix pool.

**Examples**

```
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 N/A  
Description

## 5.12 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
	<i>ipv6-address</i>	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 the domain-name address.

```
Ruijie(config-dhcp)# option52 2008:1::1
```

Related Commands	Command	Description
	N/A	N/A

Platform N/A  
Description

## 5.13 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	Parameter	Description
Description	<i>ipv6-prefix/prefix-length</i>	Sets the IPv6 address prefix and the prefix length.
	<i>client-DUID</i>	Sets the client DUID.
	<i>lifetime</i>	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
	<b>ipv6 dhcp pool</b>	Sets a DHCPv6 pool.
	<b>ipv6 local pool</b>	Sets a local prefix pool.
	<b>prefix-delegation pool</b>	Specifies the DHCPv6 local prefix pool.
	<b>show ipv6 dhcp pool</b>	Displays the DHCPv6 pool information.

**Platform Description** N/A

## 5.14 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
	<i>poolname</i>	Sets the local prefix pool name.
	<b>lifetime</b>	Sets the lifetime of the address prefix allocated to the client. With the keyword <b>lifetime</b> configured, both parameters <i>valid-lifetime</i> and

	<i>preferred-lifetime</i> shall be configured.
<i>valid-lifetime</i>	Sets the valid lifetime of using the allocated address prefix for the client.
<i>preferred-lifetime</i>	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** The following example specifies the local prefix pool for the DHCPv6 server.

**Examples**

```
Ruijie(config-dhcp) # prefix-delegation pool client-prefix-pool lifetime 2000
1000
```

Related Commands	Command	Description
	<b>ipv6 dhcp pool</b>	Sets a DHCPv6 pool.
	<b>ipv6 local pool</b>	Sets a local prefix pool.
	<b>prefix-delegation</b>	Statically binds the client with the address prefix.
	<b>show ipv6 dhcp pool</b>	Displays the DHCPv6 pool information.

**Platform** N/A  
**Description**

## 5.15 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** The following example displays the device DUID.

**Examples**

```
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** N/A  
**Description**

## 5.16 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
	<i>ipv6-address</i>	Sets the IPv6 address or the prefix.

**Defaults** N/A

**Command** Privileged EXEC mode  
**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** The following example displays the address binding information for the DHCPv6 server.

**Examples**

```
Ruijie# show ipv6 dhcp binding
Client DUID: 00:03:00:01:00:d0:f8:22:33:ac
IAPD: iaaid 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** N/A  
**Description**



## 5.17 show ipv6 dhcp conflict

Use this command to display the DHCPv6 address conflicts.

**show ipv6 dhcp conflict**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the DHCPv6 address conflicts.

**Examples**

```
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	Command	Description
Commands	<b>clear ipv6 dhcp conflict</b>	Clears address conflicts.

**Platform** N/A

**Description**

## 5.18 show ipv6 dhcp interface

Use this command to display the DHCPv6 interface information.

**show ipv6 dhcp interface** [ *interface-name* ]

Parameter	Parameter	Description
Description	<i>interface-name</i>	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 is displayed. If the *interface-name* is specified, the specified interface information is displayed.

**Configuration** The following example displays the DHCPv6 interface information.

**Examples**

```
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** N/A  
**Description**

## 5.19 show ipv6 dhcp pool

Use this command to display the DHCPv6 pool information.

**show ipv6 dhcp pool** [ *poolname* ]

Parameter Description	Parameter	Description
	<i>poolname</i>	Defines the DHCPv6 pool name.

**Defaults** N/A

**Command** Privileged EXEC mode  
**Mode**

**Usage Guide** If the *poolname* is not specified, all DHCPv6 interface information is displayed. If the *poolname* is specified, the specified interface information is displayed.

**Configuration** The following example displays the DHCPv6 pool information.

**Examples**

```
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** N/A  
**Description**

## 5.20 show ipv6 dhcp relay destination

Use this command to display the destination information about DHCPv6 Relay Agent.

**show ipv6 dhcp relay destination** { **all** | *interface-type interface-number* }

Parameter description	Parameter	Description
	<b>all</b>	Displays information about all configured destination addresses and relay exits.
	<b>interface</b> <i>interface-type interface-number</i>	Displays the 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

## 5.21 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
	<b>clear ipv6 dhcp relay statistics</b>	Clears the statistical information.

**Platform Description** N/A

## 5.22 show ipv6 dhcp server statistics

Use this command to display the DHCPv6 server statistics.

**show ipv6 dhcp server statistics**

Parameter	Parameter	Description
-----------	-----------	-------------

<b>Description</b>	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** The following example displays the DHCPv6 server statistics.

**Examples** 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
	<b>ipv6 dhcp pool</b>	Sets a DHCPv6 pool.

Platform N/A

Description

## 5.23 show ipv6 local pool

Use this command to display the local prefix pool configuration and usage.

**show ipv6 local pool** [*poolname*]

Parameter	Parameter	Description
Description	<i>poolname</i>	The local prefix pool name

Defaults N/A

Command Privileged EXEC mode  
Mode

Usage Guide This command is used to display the local prefix pool configuration and usage.

Configuration The following example displays all local prefix pool information.

### Examples

```
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	Command	Description
---------	---------	-------------

---

<b>Commands</b>	N/A	N/A
-----------------	-----	-----

**Platform** N/A

**Description**

## 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
<i>host-name</i>	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
<b>show hosts</b>	Displays the host name buffer table.

#### Platform Description

N/A

### 6.2 ip domain-lookup

Use this command to enable DNS domain name resolution. Use the **no** form of this command to disable the DNS domain name resolution function.

**ip domain-lookup**

**no ip domain-lookup**

#### Parameter Description

Parameter	Description
-----------	-------------



N/A	N/A
-----	-----

**Defaults** This function is enabled by default.

**Command Mode** Global configuration mode.

**Usage Guide** This command enables the domain name resolution function.

**Configuration** The following example disables the DNS domain name resolution function.

**Examples** Ruijie(config)# no ip domain-lookup

Related Commands	Command	Description
	<b>show hosts</b>	Displays the DNS related configuration information.

**Platform** N/A  
**Description**

## 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** *host-name ip-address*

**no ip host** *host-name ip-address*

Parameter Description	Parameter	Description
	<i>host-name</i>	The host name of the equipment
	<i>ip-address</i>	The IP address of the equipment

**Defaults** N/A

**Command Mode** Global configuration mode.

**Usage Guide** N/A

**Configuration** The following example configures IPv4 address 192.168.5.243 for domain name www.test.com.

**Examples** Ruijie(config)# ip host www.test.com 192.168.5.243

Related	Command	Description

Commands	
<b>show hosts</b>	Show the DNS related configuration information.

**Platform** N/A

**Description**

## 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** ] { *ip-address* | *ipv6-address* }

**no ip name-server** [ **oob** ] [ *ip-address* | *ipv6-address* ]

Parameter Description	Parameter	Description
	<b>oob</b>	Enables the out-band channel. It must be set when MGMT is specified as the source port.
	<i>ip-address</i>	The IP address of the domain name server.
	<i>ipv6-address</i>	The IPv6 address of the domain name server.

**Defaults** No domain name server is configured by default.

**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** The following example configures the IPv4 domain name server and IPv6 domain name server.

**Examples**

```
Ruijie(config)# ip name-server 192.168.5.134
Ruijie(config)# ip name-server 2001:0DB8::250:8bff:fee8:f800
2001:0DB8:0:f004::1
```

Related Commands	Command	Description
	<b>show hosts</b>	Displays the DNS related configuration information.

**Platform** N/A

**Description**

## 6.5 ipv6 host

Use this command to configure the mapping of the host name and the IPv6 address by manual. Use the **no** form of the command to remove the host list.

**ipv6 host** *host-name* *ipv6-address*

**no ipv6 host** *host-name* *ipv6-address*

**Parameter  
Description**

Parameter	Description
<i>host-name</i>	The host name of the equipment
<i>ipv6-address</i>	The IPv6 address of the equipment

**Defaults** N/A

**Command  
Mode** Global configuration mode.

**Usage Guide** To delete the host list, use the **no ipv6 host** *host-name* *ipv6-address* command.

**Configuration** The following example configures the IPv6 address for the domain name.

**Examples** Ruijie(config)# ipv6 host switch 2001:0DB8:700:20:1::12

**Related  
Commands**

Command	Description
<b>show hosts</b>	Displays the DNS related configuration information.

**Platform  
Description** N/A

## 6.6 show hosts

Use this command to display DNS configuration.

**show hosts** [ *hostname* ]

**Parameter  
Description**

Parameter	Description
<i>hostname</i>	Displays the specified domain name information,

**Defaults** All domain name information is displayed by default.

**Command** Privileged EXEC mode.  
**Mode**

**Usage Guide** This command is used to display the DNS related configuration information.

**Configuration** Ruijie# show hosts

**Examples** 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
<b>ip host</b>	Configures the host name and IP address mapping by manual.
<b>ipv6 host</b>	Configures the host name and IPv6 address mapping by manual.
<b>ip name-server</b>	Configures the DNS server.

**Platform** N/A  
**Description**

## 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
```

The 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
	<i>time</i>	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** N/A  
**Description**

## 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**

<b>Parameter Description</b>	Parameter	Description
	<i>time</i>	Sets the number of login attempts, in the range from 1 to 10.
<b>Defaults</b>	The default is 3.	
<b>Command Mode</b>	Global configuration mode	
<b>Usage Guide</b>	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.	
<b>Configuration Examples</b>	The following example sets the number of login attempts to 5.	
	<pre>Ruijie(config)# ftp-server login times 5</pre>	
	The following example restores the default setting.	
	<pre>Ruijie(config)# no ftp-server login times</pre>	
<b>Related Commands</b>	Command	Description
	N/A	N/A
<b>Platform Description</b>	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** or **default** form of this command to restore the default setting.

**ftp-server topdir** *directory*

**no ftp-server topdir**

**default ftp-server topdir**

<b>Parameter Description</b>	Parameter	Description
	<i>directory</i>	Sets the top-directory.
<b>Defaults</b>	No top-directory is configured by default.	
<b>Command Mode</b>	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** or **default** form of this command to restore the default setting.

**ftp-server timeout** *time*

**no ftp-server timeout**

**default ftp-server timeout**

**Parameter Description**

Parameter	Description
<i>time</i>	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** The following example sets the session idle timeout to 5 minutes:



**Examples**

```
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**

N/A

**Description**

## 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
<i>username</i>	Sets the login username.
<i>password</i>	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. One username 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** The following example sets the username to user:

**Examples**

```
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** N/A  
**Description**

## 7.7 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 FTP server top directory
- The FTP server user information, including username, password and connection number. If connection is set up, the IP address, port, transmission type, active/passive mode is shown

**Configuration** The following example displays the related status information of the FTP server:

**Examples**

```
Ruijie#show ftp-server
ftp-server information
=====
```

```

enable : Y
topdir : tmp:/
timeout: 10min
username:aaaa      password:(PLAIN)bbbb      connect num[2]
[0]trans-type:BINAR (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:(PLAIN)bbbb      connect num[0]
username:a2      password:(PLAIN)bbbb      connect num[0]
username:a3      password:(PLAIN)bbbb      connect num[0]
username:a4      password:(PLAIN)bbbb      connect num[0]
username:a5      password:(PLAIN)bbbb      connect num[0]
username:a6      password:(PLAIN)bbbb      connect num[0]
username:a7      password:(PLAIN)bbbb      connect num[0]
username:a8      password:(PLAIN)bbbb      connect num[0]
username:a9      password:(PLAIN)bbbb      connect num[0]

```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

## 8 FTP Client Commands

### 8.1 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
	<b>vrf</b> <i>vrf-name</i>	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** The following example configures ASCII FTP transfer.

**Examples**

```
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

## 8.2 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
<b>vrf</b> <i>vrf-name</i>	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

## 8.3 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** *vrf-name* ] **source-address** {*ip-address* | *ipv6-address*}

**no ftp-client** [ **vrf** *vrf-name* ] **source-address**

**default ftp-client** [ **vrf** *vrf-name* ]

### Parameter Description

Parameter	Description
<b>vrf</b> <i>vrf-name</i>	VRF name. The default is the public network instance.

**Defaults** By default, the IP address is not bound with the client locally. Instead, it is selected by the route.

**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 binds FTP Client with source IP address 192.168.23.236.

```
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

## 8.4 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
<i>username</i>	The username for logging into FTP Server. It is limited to 40 bytes and must not contain ":", "@", "/" and space, neither can it be omitted.
<i>password</i>	The password for logging into FTP Server. It is limited to 32 bytes and must not contain ":", "@", "/" and space, neither can it be omitted.
<i>dest-address</i>	IP address of the target FTP Server.
<i>remote-directory</i>	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.
<i>remote-file</i>	Filename on the remote server. It is limited to 255 bytes and doesn't support space or Chinese character.
<i>local-directory</i>	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.
<i>local-file</i>	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 Commands

Command	Description
<b>copy tftp</b>	Uses the TFTP protocol to transfer files.

**Platform** N/A

**Description**

## 8.5 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
<i>username</i>	The username for logging into FTP Server. It is limited to 40 bytes and must not contain ":", "@", "/" and space, neither can it be omitted.
<i>password</i>	The password for logging into FTP Server. It is limited to 32 bytes and must not contain ":", "@", "/" and space, neither can it be omitted.
<i>dest-address</i>	IP address of the target FTP Server.
<i>remote-directory</i>	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.
<i>remote-file</i>	Filename on the remote server. It is limited to 255 bytes and doesn't support space or Chinese character.
<i>local-directory</i>	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.
<i>local-file</i>	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** 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".

**Examples**

```
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** N/A

**Description**

## 9 Network Connectivity Test Tool Commands

### 9.1 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
<i>owner</i>	User index
<i>test-name</i>	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

### 9.2 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* [**length** *length*] [**ntimes** *times*] [**timeout** *seconds*] [**data** *data*] [**source** *source*] [**df-bit**] [**validate**] [**detail**] [**interval** *millisecond* ]]

#### Parameter Description

Parameter	Description
-----------	-------------

<b>oob</b>	Enables the out-band channel. It must be set when MGMT is specified as the source port.
<i>vrf-name</i>	VRF name
<i>address</i>	Specifies an IPv4 address.
<i>length</i>	Specifies the length of the packet to be sent (range: 36-18024, default: 100).
<i>times</i>	Specifies the number of packets to be sent (range:1-4294967295).
<i>seconds</i>	Specifies the timeout time (range: 1-10 seconds).
<i>data</i>	Specifies the data to fill in.
<i>source</i>	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.
<b>df-bit</b>	Sets the DF bit for the IP address. DF bit=1 indicates not to segment the datagrams. By default, the DF bit is 0.
<b>validate</b>	Sets whether to validate the reply packets or not.
<b>detail</b>	Sets whether to contain details in the echoed message. By default, only "!" and "." are displayed.
<i>millisecond</i>	Specifies the ping interval, in the range from 10 to 300000 milliseconds. Default: 100 milliseconds.

**Defaults** Five packets with 100Byte in length are sent to the specified IP address within specified time (2s by default).

**Command** Privileged EXEC mode.

**Mode**

**Usage** 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.

**Guide**

**Configuration** The following example tests the connectivity of a network to locate the network connectivity problem.

**Examples**

```
(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

### Command

### Description

<b>Command s</b>		
	N/A	N/A

**Platform** N/A

**Description**  
n

## 9.3 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* [**length** *length*] [**ntimes** *times*] [**timeout** *seconds*] [**data** *data*] [**source** *source*] [**detail**] [**interval** *millisecond* ]]

<b>Parameter Description n</b>	Parameter	Description
	<b>oob</b>	Enables the out-band channel. It must be set when MGMT is specified as the source port.
	<i>vrf-name</i>	VRF name
	<i>ip-address</i>	Specifies an IPv6 address.
	<i>length</i>	Specifies the length of the packet to be sent (range: 36-18024, default: 100).
	<i>times</i>	Specifies the number of packets to be sent (range:1-4294967295).
	<i>seconds</i>	Specifies the timeout time (range: 1-10 seconds).
	<i>data</i>	Specifies the data to fill in.
	<i>source</i>	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.
	<b>detail</b>	Sets whether to contain details in the echoed message. By default, only “!” and “.” are displayed.
	<i>millisecond</i>	Specifies the ping interval, in the range from 10 to 300000 milliseconds. Default: 100 milliseconds.

**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** If the device can be pinged, the response information is displayed, and the statistics is listed at the end. If the

**Guide** 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** The following example tests the connectivity of a network to locate the network connectivity problem.

**Examples** (regular ping) Ruijie# ping ipv6 2001::5  
 Sending 5, 100-byte ICMP Echoes to 2001::5, 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 2001::1 detail
Sending 5, 100-byte ICMP Echoes to 2001::1, timeout is 2 seconds:
  < press Ctrl+C to break >
Reply from 2001::1: bytes=100 time=1ms
Reply from 2001::1: bytes=100 time=1ms
Reply from 2001::1: bytes=100 time=1ms
Reply from 2001::1: bytes=100 time=1ms
Reply from 2001::1: bytes=100 time=1ms
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/1 ms.
```

The following example tests the connectivity of a network to locate the network connectivity problem (extension ping).

```
Ruijie# ping ipv6 2001::5 length 1500 ntimes 100 data ffff source 2001::9 timeout 3
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
```

The following example displays the details.

```
Ruijie#ping 2001::5 length 1500 ntimes 10 data ffff source 2001::9 timeout 3
Sending 10, 1500-byte ICMP Echoes to 2001::5, timeout is 3 seconds:
  < press Ctrl+C to break >
Reply from 2001::5: bytes=1500 time=1ms
Reply from 2001::5: bytes=1500 time=1ms
Reply from 2001::5: bytes=1500 time=1ms
Reply from 2001::5: bytes=1500 time=1ms
Reply from 2001::5: bytes=1500 time=1ms
Reply from 2001::5: bytes=1500 time=1ms
```

```

Reply from 2001::5: bytes=1500 time=1ms
Reply from 2001::5: bytes=1500 time=1ms
Reply from 2001::5: bytes=1500 time=1ms
Reply from 2001::5: bytes=1500 time=1ms

Success rate is 100 percent (10/10), round-trip min/avg/max = 1/1/1 ms.

```

#### Related Commands

Command	Description
N/A	N/A

**Platform** N/A

#### Description

## 9.4 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** N/A

**Description**

## 9.5 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**] [*address* [**probe** *number*] [**source** *source*] [**timeout** *seconds*] [**ttr** *minimum maximum*]]

Parameter Description	Parameter	Description
	<b>oob</b>	Enables the out-band channel. It must be set when MGMT is specified as the source port.
	<i>vrf-name</i>	VRF name
	<i>address</i>	Specifies an IPv4 address.
	<i>number</i>	Specifies the number of probe packets to be sent (range: 1-255).
	<i>source</i>	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.
	<i>seconds</i>	Specifies the timeout time (range: 1-10 seconds).
	<i>minimum maximum</i>	Specifies the minimum and maximum TTL values (range:1-255).

**Defaults** By default, *seconds* is 3 seconds, *number* is 3, *minimum* and *maximum* are 1 and 255.

**Command** Privileged EXEC mode: enables extended functions.

**Mode** 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** The following is two examples of the application bout traceroute, the one is of the smooth network,



**Examples**

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

## 9.6 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* [ **probe number** ] [ **timeout seconds** ] [ **ttl minimum maximum** ]]

#### Parameter Description

Parameter	Description
<b>oob</b>	Enables the out-band channel. It must be set when MGMT is specified as the source port.
<i>vrf-name</i>	VRF name
<i>address</i>	Specifies an IPv6 address.
<i>number</i>	Specifies the number of probe packets to be sent.

<i>seconds</i>	Specifies the timeout time.
<i>minimum maximum</i>	Specifies the minimum and maximum TTL values.

**Defaults** By default, *seconds* is 3 seconds, *number* is 3, *minimum* and *maximum* are 1 and 255.

**Command** Privileged EXEC mode: enables extended functions.

**Mode** 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 about 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
 0 3000::1          0 msec  0 msec  0 msec
 1 3001::1          4 msec  4 msec  4 msec
 2 3002::1          8 msec  8 msec  4 msec
 3 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
 0 3000::1          0 msec  0 msec  0 msec
 1 3001::1          4 msec  4 msec  4 msec
 2 3002::1          8 msec  8 msec  4 msec
 3 * * *
 4 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

## 10 TCP Commands

### 10.1 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* ]

#### Parameter Description

Parameter	Description
<b>interval</b> <i>num1</i>	The interval of sending the keepalive packet, in the range from 1 to 120 in the unit of seconds, The default is 75.
<b>times</b> <i>num2</i>	Keepalive packet sending times, in the range from 1 to 10. The default is 6.
<b>idle-period</b> <i>num3</i>	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 1,800 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** to 180 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

## 10.2 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
<i>max-segment-size</i>	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

The following example sets the upper limit of the MSS value to 1,300 bytes.

### Examples

```
Ruijie(config)# ip tcp mss 1300
```

### Related Commands

Command	Description
N/A	N/A

### Platform

N/A

### Description

## 10.3 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
<b>age-timer</b> <i>minutes</i>	The time interval for further discovery after discovering PMTU. Its value ranges from 10 to 30 minutes. The default value is 10.
<b>age-timer</b> <i>infinite</i>	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 until the PMTU value reaches the MSS or the user stops this timer. Use the parameter **age-timer infinite** to stop this timer.

**Configuration** The following example enables PMTU discovery.

**Examples** Ruijie(config)# ip tcp path-mtu-discovery

**Related Commands**

Command	Description
<b>show tcp pmtu</b>	Shows the PMTU value for the TCP connection.

**Platform Description** From RGOS 11.0, this command applies to only IPv4 TCP. This function is enabled for IPv6 TCP constantly and cannot be disabled.

## 10.4 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** From RGOS 11.0, this command applies to both IPv4 TCP and IPv6 TCP.

## 10.5 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**

**Parameter Description**

Parameter	Description
<i>seconds</i>	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** From RGOS 11.0, this command applies to both IPv4 TCP and IPv6 TCP.

**Description**

## 10.6 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
	<i>size</i>	Size of receiving buffer and sending buffer for TCP connections in the range from 128 to 65535 << 14 bytes.

**Defaults** The default is 65,535 bytes.

**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 16,386 bytes.

```
Ruijie(config)# ip tcp window-size 16386
```

Related Commands	Command	Description
	N/A	N/A



**Platform** In RGOS 10.x, this command takes effect only on IPv4 TCP. From RGOS 11.0, this command applies to both IPv4 TCP and IPv6 TCP.

**Description**

## 10.7 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
<i>interval</i>	The interval of sending keepalive packets, in the range from 1 to 65535 in the unit of seconds. The default is 60.
<b>garbage</b>	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** When you run this RGOS 10.x command, it is converted to the **ip tcp keepalive** command

**Description** automatically in RGOS 11.0.

## 10.8 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
<i>interval</i>	The interval of sending keepalive packets, in the range from 1 to 65535 in the unit of seconds. The default is 60.
<b>garbage</b>	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.

## 10.9 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
-----------	-------------

<b>local-ipv6</b> <i>X:X:X:X::X</i>	Local IPv6 address
<b>local-port</b> <i>num</i>	Local port
<b>peer-ipv6</b> <i>X:X:X:X::X</i>	Peer IPv6 address
<b>peer-port</b> <i>num</i>	Peer port
<b>statistics</b>	Displays IPv6 TCP connection statistics

**Defaults** N/A

**Command** Privileged EXEC mode

**Mode**

**Usage Guide** N/A

**Configuration** The following example displays the current IPv6 TCP connection information.

**Examples**

```
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** N/A

**Description**

## 10.10 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
<b>local-ipv6</b> X:X:X:X::X	Local IPv6 address
<b>local-port</b> <i>num</i>	Local port
<b>peer-ipv6</b> X:X:X:X::X	Peer IPv6 address
<b>peer-port</b> <i>num</i>	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

## 10.11 show ipv6 tcp port

Use this command to display the current IPv6 TCP port status.

**show ipv6 tcp port [ *num* ]****Parameter  
Description**

Parameter	Description
<i>num</i>	Port number

**Defaults** N/A**Command  
Mode** Privileged EXEC mode**Usage Guide** N/A**Configuration** The following example displays the current IPv6 TCP port status.**Examples**

```
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	<p>Current status of the TCP connection. There are eleven possible states:</p> <p>CLOSED: The connection has been closed.</p> <p>LISTEN: Listening state</p> <p>SYNSENT: In the three-way handshake phase when the SYN packet has been sent out.</p> <p>SYNRCVD: In the three-way handshake phase when the SYN packet has been received.</p> <p>ESTABLISHED: The connection has been established.</p> <p>FINWAIT1: The local end has sent the FIN packet.</p> <p>FINWAIT2: The FIN packet sent by the local end has been acknowledged.</p> <p>CLOSEWAIT: The local end has received the FIN packet from the peer end.</p> <p>LASTACK: The local end has received the FIN packet from the peer end, and then sent its own FIN packet.</p> <p>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.</p> <p>TIMEWAIT: The FIN packet sent by the local end has been acknowledged, and the local end has also acknowledged the FIN packet.</p>
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

## 10.12 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
<b>local-ip</b> <i>a.b.c.d</i>	Local IP address.
<b>local-port</b> <i>num</i>	Local port.
<b>peer-ip</b> <i>a.b.c.d</i>	Peer IP address.
<b>peer-port</b> <i>num</i>	Peer port.
<b>statistics</b>	Displays IPv4 TCP connection statistics.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the current IPv4 TCP connection information.

## Examples

```
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

	<p>SYNSENT: In the three-way handshake phase when the SYN packet has been sent out.</p> <p>SYNRCVD: In the three-way handshake phase when the SYN packet has been received.</p> <p>ESTABLISHED: The connection has been established.</p> <p>FINWAIT1: The local end has sent the FIN packet.</p> <p>FINWAIT2: The FIN packet sent by the local end has been acknowledged.</p> <p>CLOSEWAIT: The local end has received the FIN packet from the peer end.</p> <p>LASTACK: The local end has received the FIN packet from the peer end, and then sent its own FIN packet.</p> <p>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.</p> <p>TIMEWAIT: The FIN packet sent by the local end has been acknowledged, and the local end has also acknowledged the FIN packet.</p>
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



## 10.13 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** The following example shows TCP parameters.

**Examples**

```
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** N/A

**Description**

## 10.14 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
<b>local-ip</b> <i>a.b.c.d</i>	Local IP address.
<b>local-port</b> <i>num</i>	Local port.
<b>peer-ip</b> <i>a.b.c.d</i>	Peer IP address.
<b>peer-port</b> <i>num</i>	Peer port.

**Defaults** N/A

**Command  
Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays PMTU of IPv4 TCP connection.

#### Examples

```

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
<b>ip tcp path-mtu-discovery</b>	Enables the TCP PMTU discovery function.

**Platform** N/A

#### Description

## 10.15 show tcp port

Use this command to display information about the current TCP port.

**show tcp port** [ *num* ]

#### Parameter Description

Parameter	Description
<i>num</i>	Port number

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the current IPv4 TCP port status.

#### Examples

```
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	<p>Status of the current TCP connection. There are eleven possible states:</p> <p>CLOSED: The connection has been closed.</p> <p>LISTEN: Listening state</p> <p>SYNSENT: In the three-way handshake phase when the SYN packet has been sent.</p> <p>SYNRCVD: In the three-way handshake phase when the SYN packet has been received.</p> <p>ESTABLISHED: The connection has been established.</p> <p>FINWAIT1: The local end has sent the FIN packet.</p> <p>FINWAIT2: The FIN packet sent by the local end has been acknowledged.</p> <p>CLOSEWAIT: The local end has received the FIN packet from the peer end.</p> <p>LASTACK: The local end has received the FIN packet from the peer end, and then sent its own FIN packet.</p> <p>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.</p> <p>TIMEWAIT: The FIN packet sent by the local end has been acknowledged, and the local end has also acknowledged the FIN packet.</p>

#### Related Commands

Command	Description
N/A	N/A

Platform N/A

Description

## 10.16 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** The following example shows TCP parameters.

**Examples**

```
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

## 11 IPv4/IPv6 REF Commands

### 11.1 clear ip ref packet statistics

Use this command to clear IPv4 Ruijie Express Forwarding (REF) packet statistics.

**clear ip 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 clears IPv4 REF packet statistics.

```
Ruijie #clear ip ref packet statistics
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 11.2 clear ipv6 ref packet statistics

Use this command to clear IPv6 REF packet statistics.

**clear 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** The following example clears IPv6 REF packet statistics.

**Examples** Ruijie #clear ipv6 ref packet statistics

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 11.3 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
	<b>glean</b>	Aggregate adjacent node, which is used for a direct route
	<b>local</b>	Local adjacent node, which is used by the local host
	<i>ip</i>	Next-hop IP address
	<i>interface_type</i>	Interface type
	<i>interface_number</i>	Interface number
	<b>discard</b>	Displays discarded adjacent nodes.
	<b>statistics</b>	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

## 11.4 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
<b>oob</b>	Out of band, namely, the network that the management interface belongs to, supported only by the device supporting the management interface.
<b>vrf</b> <i>vrf_name</i>	VRF name, supported only by the VRF-supported device.
<i>source_ipaddress</i>	Source IP address of the packet
<i>dest_ipaddress</i>	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** The following example displays the IPv4 REF exact route from 192.168.217.74 to 192.168.13.1.

**Examples**

```
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
	<b>show ip ref route</b>	Displays all routing information in the current REF module.

**Platform Description** N/A

## 11.5 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** The following example displays IPv4 REF packet statistics.

**Examples**

```
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**

Command	Description
---------	-------------

Commands		
	N/A	N/A

Platform N/A

Description

## 11.6 show ip ref resolve-list

Use this command to display the IPv4 REF resolution information.

**show ip ref resolve-list**

Parameter	Parameter	Description
Description	N/A	N/A

Defaults N/A

Command Privileged EXEC mode  
Mode

Usage Guide N/A

Configuration The following example displays IPv4 REF resolution information.

Examples

```
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	Command	Description
Commands	N/A	N/A

Platform N/A

Description

## 11.7 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
	<b>oob</b>	Out of band, namely, the network that the management interface belongs to, supported only by the device supporting the management interface.
	<b>vrf</b> <i>vrf_name</i>	VRF name, supported only by the VRF-supported device.
	<b>default</b>	Specifies the default route.
	<i>ip</i>	Specifies the destination IP address of the route
	<i>mask</i>	Specifies the mask of the route.
	<b>statistics</b>	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**

Command	Description
---------	-------------

<b>Commands</b>			
	<table> <tr> <td data-bbox="312 230 887 313">show ip ref exact-route</td><td data-bbox="887 230 1412 313">Displays the accurate REF forwarding path of an IP packet.</td></tr> </table>	show ip ref exact-route	Displays the accurate REF forwarding path of an IP packet.
show ip ref exact-route	Displays the accurate REF forwarding path of an IP packet.		

**Platform** N/A

**Description**

## 11.8 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	Parameter	Description
<b>Description</b>	<b>glean</b>	<b>Aggregate adjacent node, which is used for a direct route</b>
	<b>local</b>	<b>Local adjacent node, which is used by the local host</b>
	<i>ipv6-address</i>	<b>Next-hop IP address</b>
	<i>interface_type</i>	<b>Interface type</b>
	<i>interface_number</i>	<b>Interface number</b>
	<b>discard</b>	<b>Displays discarded adjacent nodes.</b>
	<b>statistics</b>	<b>Statistics</b>

**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(header data)	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** N/A  
**Description**

## 11.9 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
	<b>oob</b>	Out of band, namely, the network that the management interface belongs to, supported only by the device supporting the management interface.
	<b>vrf vrf_name</b>	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 Mode** Privileged EXEC 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** N/A  
**Description**

## 11.10 show ipv6 ref packet statistics

Use this command to display IPv6 REF packet statistics.

**show 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** The following example displays IPv6 REF packet statistics.

**Examples**

```
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** N/A  
**Description**

## 11.11 show ipv6 ref resolve-list

This command is used to display the IPv6 REF resolution information.

**show ipv6 ref resolve-list**



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 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

## 11.12 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
	<b>oob</b>	Out of band, namely, the network that the management interface belongs to, supported only by the device supporting the management interface.
	<b>vrf</b> <i>vrf_name</i>	VRF name, supported only by the VRF-supported device.
	<b>default</b>	Specifies the default route.

<b>statistics</b>	Statistics
<b>prefix/len</b>	Displays the route with the specified prefix (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





## IP Routing Commands

---

1. RIP Commands
2. OSPFv2 Commands
3. OSPFv3 Commands
4. IS-IS Commands
5. BGP4 Commands
6. PBR Commands
7. VRF Commands
8. RIPng Commands
9. NSM Commands
10. Protocol-independent 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
<b>vrf</b> <i>vrf-name</i>	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

The following example creates a VRF with the name of vpn1 and creates its RIP instance.

### Examples

```
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
<b>exit-address-family</b>	Exits the address family configuration sub-mode.
<b>ip vrf</b>	Creates a VRF.

**Platform** N/A

**Description**

## 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 process 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** The following example disables automatic route summary of RIPv2.

**Examples**

```
Ruijie (config)# router rip
Ruijie (config-router)# version 2
Ruijie (config-router)# no auto-summary
```

Related Commands	Command	Description
	<b>version</b>	Defines the RIP software versions: v1 or v2. Both v1 and v2 are supported by default.

**Platform** N/A  
**Description**

## 1.3 bfd all-interfaces

Use this command to enable all interfaces running RIP to use the BFD function. Use the **no** form of this command to restore the default setting.

**bfd all-interfaces**

**no bfd all-interfaces**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** BFD is not configured by default.

**Command** Routing process configuration mode  
**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
	<b>route ip</b>	Creates the RIP routing progress and enters the routing process configuration mode.
	<b>ip rip bfd [ disable ]</b>	Configures a specified interface running RIP to enable or disable link detection using the BFD.

**Platform** N/A  
**Description**

## 1.4 default-information originate

Use this command to generate a default route in the RIP process. 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
<b>always</b>	(Optional) Enables RIP to generate the default route, no matter whether the default route exists or not.
<b>metric</b> <i>metric-value</i>	(Optional) The original metric value of the default route with the value range 1 to 15 of metric-value.
<b>route-map</b> <i>map-name</i>	(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

The following example generates a default route to the RIP routing table.

### Examples

```
Ruijie(config-router)# default-information originate always
```

### Related

Command	Description
---------	-------------



Commands		
	<b>ip rip default-information</b>	Notifies the default route through an interface.
	<b>redistribute</b>	Redistributes the routes from other protocols to RIP.

**Platform** N/A

**Description**

## 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
	<i>metric-value</i>	Indicates the default metric value with the range from 1 to 16. If the metric value is greater than or equal to 16, the RGOS 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
	<b>redistribute</b>	Redistributes the routes from one routing

	domain to another routing domain.
--	-----------------------------------

**Platform** N/A

**Description**

## 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
	<i>distance</i>	Sets the management distance of a RIP route, an integer in the range from 1 to 255.
	<i>ip-address</i>	Indicates the prefix of the source IP address of the route.
	<i>wildcard</i>	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** N/A

**Description**

## 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
<i>access-list-number</i>   <i>name</i>	Specifies the ACL. Only the routes that are allowed by the ACL can be accepted.
<b>prefix</b> <i>prefix-list-name</i>	Uses the prefix list to filter the routes.
<b>gateway</b> <i>prefix-list-name</i>	Uses the prefix list to filter the source of the routes.
<i>interface-type</i> <i>interface-number</i>	(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
<b>access-list</b>	Defines the ACL rule.
<b>prefix-list</b>	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
<i>access-list-number</i>   <i>name</i>	Specifies the ACL.
<b>prefix</b> <i>prefix-list-name</i>	Uses the prefix list to filter routes.
<i>interface</i>	(Optional) Applies route update advertisement control to a specified interface in the distribution list.
<b>bgp</b>	(Optional) Applies route update advertisement control to only routes introduced from bgp in this distribution list.
<b>connected</b>	(Optional) Applies route update advertisement control to only connected routes in this distribution list.
<b>isis</b> [ <i>area-tag</i> ]	(Optional) Applies route update advertisement control to only routes introduced from ISIS in this distribution list. <i>area-tag</i> specifies an ISIS instance.
<b>ospf</b> <i>process-id</i>	(Optional) Applies route update advertisement control to only routes introduced from OSPF in this distribution list. <i>process-id</i> specifies an OSPF instance.
<b>rip</b>	(Optional) Applies route update advertisement control to only RIP routes in this distribution list.
<b>static</b>	(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** The following example advertises only the 192.168.12.0/24 route.

### Examples

```
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
<b>access-list</b>	Defines the ACL rule.
<b>prefix-list</b>	Defines the prefix list.
<b>redistribute</b>	Configures route redistribution.

**Platform** N/A  
**Description**

## 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** The following example operates the RIP instance of a specified VRF, vpn1.

**Examples**

```
Ruijie(config)# router rip
Ruijie(config-router)# address-family ipv4 vrf vpn1
Ruijie(config-router-af)# enable mib-binding
```

**Related  
Commands**

Command	Description
<b>show ip rip</b>	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** The following example enters or exits the address family configuration mode.

#### Examples

```
Ruijie(config-router)# address-family ipv4 vrf vpn1
Ruijie(config-router-af)# exit-address-family
```

#### Related Commands

Command	Description
<b>address-family</b>	Enters the address family configuration sub-mode.

**Platform** N/A  
**Description**

### 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
<i>route-map-name</i>	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** The following example enables FRR for RIP instance 1 and associates route map *fast reroute*.

**Examples**

```
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 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  
Description**

Parameter	Description
<i>name-of-keychain</i>	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
<b>ip rip authentication mode</b>	Defines the RIP authentication mode.
<b>ip rip authentication text-password</b>	Enables RIP authentication, and sets the password string of RIP plaintext authentication. RIP data packet authentication is supported only by RIPv2.
<b>ip rip receive version</b>	Defines the version of RIP packets received on the interface.
<b>ip rip send version</b>	Defines the version of RIP packets sent on the interface.
<b>key chain</b>	Defines the keychain and enters keychain configuration mode.

**Platform** N/A  
**Description**

## 1.13 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
<b>text</b>	Configures RIP authentication as plaintext authentication.
<b>md5</b>	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** The following example configures the RIP authentication mode on the fastEthernet 0/1 as MD5.

**Examples**

```
Ruijie (config)#interface fastEthernet 0/1
Ruijie (config-if-FastEthernet 0/1)# ip rip authentication mode md5
```

**Related  
Commands**

Command	Description
<b>ip rip authentication key-chain</b>	Enables the RIP authentication mode and specifies the keychain used for RIP authentication. Only RIPv2 supports authentication of the RIP data packet.
<b>ip rip authentication text-password</b>	Enables the RIP authentication mode, and sets the password string of RIP plaintext authentication. Only RIPv2 supports authentication of the RIP data packet.
<b>key chain</b>	Defines the keychain and enters the keychain configuration mode

**Platform** N/A**Description**

## 1.14 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
<b>0</b>	Specifies that the key is displayed as plaintext.
<b>7</b>	Specifies that the key is displayed as cipher text.

<i>password-string</i>	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
<b>ip rip authentication mode</b>	Defines the RIP authentication mode.
<b>ip rip authentication key-chain</b>	Enables the RIP authentication mode and specifies the keychain used for RIP authentication. Only RIPv2 supports authentication.

**Platform** N/A

**Description**

## 1.15 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
<b>disable</b>	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 than 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
<b>route ip</b>	Enables the RIP routing process and enters the routing process configuration mode.
<b>bfd all-interfaces</b>	Configures all interfaces running RIP to use the BFD to perform link detection.

**Platform** N/A**Description**

## 1.16 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
<b>only</b>	Notifies the default route rather than other routes.
<b>originate</b>	Notifies the default route and other routes.
<b>metric <i>metric-value</i></b>	Specifies the metric value of the default route, in the range from 1 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** The following example creates a default route which is notified on ethernet0/1 only.

**Examples**

```
Ruijie(config)#interface ethernet 0/1
Ruijie(config-if-Ethernet 0/1)#ip rip default-information only
```

**Related  
Commands**

Command	Description
<b>default-information originate</b>	Generates a default route in the RIP process.

**Platform** N/A  
**Description**

## 1.17 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** The following example prohibits receiving RIP data packages on fastEthernet 0/1.

**Examples**

```
Ruijie (config)# interface fastEthernet 0/1
Ruijie (config-if-FastEthernet 0/1)# no ip rip receive enable
```

**Related**

Command	Description
---------	-------------

Commands		
	<b>ip rip send enable</b>	Enables or disables the interface to send RIP data packages.
	<b>passive-interface</b>	Configures a passive RIP interface.

Platform N/A

Description

## 1.18 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
	<b>1</b>	(Optional) Receives only RIPv1 packets.
	<b>2</b>	(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** The following example enables receiving both RIPv1 and RIPv2 data packages.

**Examples**

```
Ruijie (config)#interface fastEthernet 0/1
Ruijie (config-if-FastEthernet 0/1)# ip rip receive version 1 2
```

Related Commands	Command	Description
	<b>version</b>	Defines the default version of the RIP packets received/sent on the interface.

Platform N/A

Description

## 1.19 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

The following example prohibits sending RIP data packages on fastEthernet 0/1.

### Examples

```
Ruijie (config)# interface fastEthernet 0/1
Ruijie (config-if-FastEthernet 0/1)# no ip rip send enable
```

### Related Commands

Command	Description
<b>ip rip receive enable</b>	Enables or disables receiving RIP packets on the interface.
<b>passive-interface</b>	Configures a passive RIP interface.

### Platform

N/A

### Description

## 1.20 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** The following example disables sending RIP supernet routes on the fastEthernet 0/1 interface.

**Examples**

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# no ip rip send supernet-routes
```

**Related  
Commands**

Command	Description
<b>version</b>	Defines the RIP version
<b>ip rip send enable</b>	Enables or disables sending the RIP package on the interface.

**Platform** N/A

**Description**

## 1.21 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
<b>1</b>	(Optional) Receives only RIPv1 packets.
<b>2</b>	(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
<b>version</b>	Defines the default version of the RIP packets received/sent on the interfaces.

**Platform** N/A

**Description**

## 1.22 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
<b>poisoned-reverse</b>	(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** The following example disables the RIP split horizon function on the interface fastethernet 0/0.

**Examples**

```
Ruijie (config)# interface fastethernet 0/1
Ruijie (config-if)# no ip rip split-horizon
```

**Related  
Commands**

Command	Description
<b>neighbor (RIP)</b>	Defines the IP address of the neighbor of RIP.
<b>validate-update-source</b>	Enables the source address authentication of the RIP route update message.

**Platform** N/A

**Description**

## 1.23 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
<i>ip-address</i>	Indicates the IP addresses to be converged.
<i>ip-network-mask</i>	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** 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.

**Examples**

```
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
<b>auto-summary</b>	Enables the automatic convergence of RIP routes.

**Platform** N/A

**Description**

## 1.24 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
<b>retransmit-timer</b> <i>timer</i>	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.
<b>retransmit-count</b> <i>count</i>	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
<b>show ip rip database</b>	Displays the summarized routing information of the RIP database.
<b>show ip rip interface</b>	Displays the RIP interface information.

**ip rip split-horizon**

Configures RIP split horizon.

**Platform** N/A**Description**

## 1.25 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**

The following example sends RIPv2 packets in broadcast mode on the fastEthernet 0/1 interface.

**Examples**

```
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** N/A**Description**

## 1.26 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
<i>ip-address</i>	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** The following example creates a VRF with the name of vpn1 and creates its RIP instance.

**Examples**

```
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
<b>passive-interface</b>	Configures the interface as a passive interface.

**Platform** N/A

**Description**

## 1.27 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
	<i>network-number</i>	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.
	<i>wildcard</i>	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** N/A

**Description**

## 1.28 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
	<i>access-list-number   name</i>	Specifies the ACL.

<b>in</b>	Modifies the metric of the received routes using the ACL.
<b>out</b>	Modifies the metric of the sent routes using the ACL.
<i>offset</i>	Indicates the offset of changed metric values. The value is in the range from 0 to16.
<i>interface-type</i>	Applies the ACL to a specified interface.
<i>interface-number</i>	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** The following example increases the metric of the RIP routes by 7 in the range specified by ACL 7.

**Examples** 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** N/A

**Description**

## 1.29 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  
Description**

Parameter	Description
<i>delay</i>	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** Routing process configuration mode

**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** The following example sets the delay to send RIP update packets to 30 milliseconds.

**Examples**

```
Ruijie(config)# router rip
Ruijie(config-router)# output-delay 30
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A  
**Description**

## 1.30 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
<b>default</b>	Sets all interfaces to the passive interfaces.
<i>interface-type interface-num</i>	Indicates the interface type and number.

**Defaults** Interfaces are set to the non passive interfaces by default.

**Command**

**Mode** Routing process configuration 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
<b>ip rip receive enable</b>	Enables or disables receiving RIP packets on the interface.
<b>ip rip send enable</b>	Enables or disables sending RIP packets on the interface.

**Platform** N/A

**Description**

## 1.31 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
<b>bgp</b>	Is redistributed from bgp.
<b>connected</b>	Is redistributed from a connected route.
<b>isis</b> <i>area-tag</i>	Is redistributed from ISIS and specifies an ISIS instance through area-tag.
<b>ospf</b> <i>process-id</i>	Is redistributed from OSPF and specifies an OSPF instance through process-id. The value is in the range from 1 to 65535.
<b>static</b>	Is redistributed from static routes.
<b>level-1</b>   <b>level-1-2</b>   <b>level-2</b>	Is used when ISIS route redistribution is configured and specifies a route with a specific level for redistribution.
<b>match</b>	Is used when OSPF route redistribution is configured and filters a route with a specific level for redistribution.

<b>metric</b> <i>metric-value</i>	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.
<b>route-map</b> <i>route-map-name</i>	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** The following example redistributes static routes to RIP.

**Examples** Ruijie(config-router)# redistribute static

**Related  
Commands**

Command	Description
<b>default-metric</b> <i>metric</i>	Sets the default metric of the route to be redistributed.
<b>default-information originate</b>	Generates the default route in the RIP process.

**Platform** N/A

**Description**

## 1.32 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
<b>network (RIP)</b>	Defines the network number of the RIP

	process.
--	----------

**Platform** N/A

**Description**

## 1.33 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

## 1.34 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
<b>vrf</b> <i>vrf-name</i>	( Optional ) Displays the RIP routing information of specified VRF.
<i>network-number</i>	( Optional ) Indicates the ID of the subnet on which route information is to be displayed.
<i>network-mask</i>	Indicates the subnet mask. It must be specified if the network number is specified.
<b>count</b>	( 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** The following example displays all converged address entries in the RIP routing database.

**Examples**

```
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
<b>show ip rip</b>	Displays the information of the currently-running routing protocol process.

**Platform** N/A

**Description**

## 1.35 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
-----------	-------------

<b>bgp</b>	Displays redistributed BGP routes.
<b>connected</b>	Displays redistributed directly-connected routes.
<b>isis <i>process-id</i></b>	Displays redistributed ISIS routes. The process-id parameter indicates ISIS process ID.
<b>ospf <i>process-id</i></b>	Displays redistributed OSPF routes. The process-id parameter indicates OSPF process ID. The range is from 1 to 65535.
<b>static</b>	Displays redistributed static routes.
<b>vrf <i>vrf-name</i></b>	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** The following example displays direct routes redistributed by the RIP process.

**Examples**

```
Ruijie# show ip rip external
Protocol connected route:
[connected] 192.100.3.0/24 metric=0
      nhop=0.0.0.0, if=2
[connected] 192.101.1.0/24 metric=0
      nhop=0.0.0.0, if=3
Protocol static route:
[static] 10.1.1.1/32 metric=0
      nhop=0.0.0.0, if=4096
[static] 10.1.2.1/32 metric=0
      nhop=0.0.0.0, if=4096
Protocol ospf 1 route:
[ospf] 1.1.1.1/32 metric=2
      nhop=192.100.3.2, if=2
[ospf] 90.1.1.1/32 metric=2
      nhop=192.100.3.2, if=2
```

**Related  
Commands**

Command	Description
<b>show ip rip</b>	Displays the information of the currently running routing protocol process.
<b>ip vrf</b>	Creates a VRF.

**Platform** N/A

**Description**

## 1.36 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
	<b>vrf</b> <i>vrf-name</i>	Displays the RIP interface of specified VRF ( optional ).
	<b>[ interface-type interface-number ]</b>	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** The following example displays the RIP interface information.

**Examples**

```
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: Registered
Interface Summary Rip:
Not Configured
Authentication mode: Text
Authentication key-chain: ripkl
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: Registered
  Interface Summary Rip:
    Not Configured
  IP interface address:
    2.2.2.111/24, next update due in 14 seconds
```

**Related  
Commands**

Command	Description
<b>show ip rip</b>	Displays the information of the currently running routing protocol process.

**Platform** N/A  
**Description**

## 1.37 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
<i>ip-address</i>	( Optional ) Displays the IP address of a specified RIP neighbor.
<b>vrf</b> <i>vrf-name</i>	( 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** The following example displays the RIP neighbor information.**Examples**

```
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
<b>show ip rip</b>	Displays the information of the routing protocol process that is running.

**Platform** N/A**Description**

## 1.38 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
<i>update</i>	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.
<i>invalid</i>	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.
<i>flush</i>	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

## 1.39 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** The following example disables verification of the source IP address of the update packet.

**Examples**

```
Ruijie (config)# router rip
Ruijie (config-router)# no validate-update-source
```

**Related  
Commands**

Command	Description
<b>ip split-horizon</b>	Enables split horizon.
<b>ip unnumbered</b>	Defines the IP unnumbered interface.
<b>neighbor (RIP)</b>	Defines the IP address of a RIP neighbor.

**Platform** N/A

**Description**

## 1.40 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 Description	Parameter	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** The following example configures the RIP version as version 2.

**Examples**

```
Ruijie (config)# router rip
Ruijie (config-router)# version 2
```

**Related  
Commands**

Command	Description
<b>ip rip receive version</b>	Defines the version of RIP packets received on the interface.
<b>ip rip send version</b>	Defines the version of RIP packets sent on the interface.
<b>show ip rip</b>	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
	<i>area-id</i>	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** The following example removes the configuration of OSPF area 2.

**Examples**

```
Ruijie(config)# router ospf 2
Ruijie(config-router)# no area 2
```

Related Commands	Command	Description
	<b>network area</b>	Defines the interface where OSPF runs and the belonging area of the interface.

**Platform** N/A

**Description**

## 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
<i>area-id</i>	Specifies ID of the area enabled with OSPF. The value can be a decimal integer or an IP address.
<b>message-digest</b>	(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 0 when 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

The following example uses MD5 authentication and the authentication password backbone in area 0 (backbone area) of the OSPF routing process.

### Examples

```
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
<b>ip ospf authentication-key</b>	Defines the OSPF plain text authentication password.
<b>ip ospf message-digest-key</b>	Defines the OSPF MD5 authentication password.

<b>area virtual-link</b>	Defines a virtual link.
--------------------------	-------------------------

**Platform** N/A

**Description**

## 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
<i>area-id</i>	ID of the stub area or NSSA
<i>cost</i>	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** The following example sets the cost of the default aggregate route to 50.

**Examples**

```
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
<b>area stub</b>	Sets an OSPF area as a stub area.
<b>area nssa</b>	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
<i>area-id</i>	Area ID
<i>acl-name</i>	Name of an Access Control List ( ACL )
<i>prefix-name</i>	Prefix-list name
<b>in</b>   <b>out</b>	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** The following example sets area 1 to learn only the inter-area routes of 172.22.0.0/8.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# access-list 1 permit 172.22.0.0 0.255.255.255
Ruijie(config)# router ospf 100
Ruijie(config-router)# area 1 filter-list access 1 in
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A  
**Description**

## 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
<i>area-id</i>	NSSAID
<b>no-redistribution</b>	Imports the routing information to a common area other than the NSSA for the NSSA ABR.
<b>default-information originate</b>	Generates and imports the default Type 7 LSA to the NSSA. This option takes effect only on the NSSA ABR or ASBR.
<b>metric</b> <i>value</i>	Sets the metric of the generated default LSA. The range is from 0 to 16777214. The default value is 1.
<b>metric-type</b> <i>type</i>	Sets the type of the generated LSA to N-1 or N-2. The default value is N-2.
<b>no-summary</b>	Prevents the NSSA ABR from sending summary LSAs ( Type-3 LSA ).
<b>translator</b>	Configures the translator for the NSSA ABR.
<b>stability-interval</b> <i>seconds</i>	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.
<b>always</b>	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** The following example sets area 1 as an NSSA on all routers of the area.

**Examples**

```
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
<b>area default-cost</b>	Defines the cost (OSPF metric) of the default aggregate route advertised to the NSSA.

**Platform** N/A

**Description**

## 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** ] [ **cost** *cost* ]

**no area area-id range** *ip-address net-mask* [ *cost* ]

**Parameter  
Description**

Parameter	Description
<i>area-id</i>	ID of the area where the aggregate route is injected into. The value can be a decimal integer or an IP address.
<i>ip address net-mask</i>	Network segment whose routes are to be aggregated
<b>advertise</b>   <b>not-advertise</b>	Whether to advertise the aggregate route
<b>cost</b> <i>cost</i>	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**

Routing process configuration mode

**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** The following example aggregate the routes of area 1 into a route 172.16.16.0/20.

**Examples**

```
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)#area-range 172.16.16.0 255.255.240.0
```

**Related Commands**

Command	Description
<b>discard-route</b>	Enables a discarded route to be added to a routing table.
<b>summary-address</b>	Configures the OSPF external route aggregation.

**Platform** N/A

**Description**

## 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
<i>area-id</i>	Stub area ID
<b>no-summary</b>	(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****Mode** Routing process configuration 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** The following example sets area 1 as the stub area on all devices in area 1.

**Examples**

```
Ruijie(config)# router ospf1
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
```

**Related  
Commands**

Command	Description
<b>area default-cost</b>	Defines the cost (OSPF metric value) of the default aggregate route advertised to the stub area.

**Platform** N/A**Description**

## 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**

Parameter	Description
-----------	-------------

**Description**

<i>area-id</i>	ID of the OSPF transition area. The value can be a decimal integer or an IP address.
<i>router-id</i>	ID of the router neighboring to the virtual link. It can be viewed with the show ip ospf command.
<b>dead-interval</b> <i>seconds</i>	(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.
<b>minimal</b>	Enables the Fast Hello function and sets the death clock to 1 second.
<b>hello-multiplier</b>	Multiplies dead-interval with hello-interval in the Fast-Hello function.
<i>multiplier</i>	Specifies the number of Hello packets that are sent every second in the Fast Hello function. The range is from 3 to 20.
<b>hello-interval</b> <i>seconds</i>	(Optional) Defines the interval at which the HELLO packet is sent by the OSPF to the virtual link in seconds. The range is from 1 to 65535. This value must be consistent with that of the neighbor.
<b>retransmit-interval</b> <i>seconds</i>	(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.
<b>transmit-delay</b> <i>seconds</i>	(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.
<b>authentication-key</b> [0 7] <i>key</i>	(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.
<b>message-digest-key</b> <i>key-id</i> md5 [0 7] <i>key</i>	(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.
<b>authentication</b>	Sets the authentication type to plain text.
<b>message-digest</b>	Sets the authentication type to MD5.
<b>null</b>	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**

**Mode** Routing process configuration 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**

The following example sets area 1 as the transition area to establish virtual link with neighbor 2.2.2.2.

**Examples**

```
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-link 2.2.2.2
```

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 in MD5 mode.

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# network 172.16.17.0 0.0.15.255 area1
Ruijie(config-router)# network 172.16.252.0 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
<b>area authentication</b>	Enables the OSPF area packet authentication and define the authentication mode.
<b>show ip ospf</b>	Displays the OSPF process information, including the router ID.
<b>show ip ospf virtual-links</b>	Monitors information about a virtual link.

**Platform** N/A  
**Description**

## 2.9 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
<i>ref-bw</i>	Reference bandwidth, in the range from 1 to 4294967 Mbps.

**Defaults** The default is 100Mbps.

**Command**  
**Mode** Routing process configuration mode

**Usage Guide** By default, the cost of an OSPF interface is equal to the reference value of the auto cost divided by the interface bandwidth.

Run the **auto-cost** command to obtain the reference value of the auto cost. The default value is 100 Mbps.

Run the **bandwidth** command to set the interface bandwidth.

The costs of OSPF interfaces on several typical lines are as follows:

64Kbps serial line: The cost is 1562.



E1 line: The cost is 48.

10M Ethernet: The cost is 10.

100M Ethernet: The cost is 1.

If you run the **ip ospf cost** command to configure the cost of an interface, the configured cost will automatically overwrite the cost that is computed based on the auto cost.

**Configuration** The following example configures the reference bandwidth as 10 Mbps.

**Examples**

```
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
<b>show ip ospf</b>	Displays the OSPF global configuration information
<b>ip ospf cost</b>	Sets the cost value of the OSPF interface.
<b>bandwidth</b>	Sets the interface bandwidth. This setting does not affect data transmission rate.

**Platform** N/A

**Description**

## 2.10 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** Ruijie(config)# router ospf 1  
**Examples** Ruijie(config-router)# bfd all-interfaces

Related Commands	Command	Description
	<b>router ospf</b>	Creates the OSPF routing process and enters routing process configuration mode.
	<b>ip ospf bfd ]</b>	Enables the specified interface running OSPF or disabling BFD for link detection.

**Platform** N/A  
**Description**

## 2.11 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** The following example disables Opaque LSA capability.

**Examples** Ruijie(config)# router ospf 1  
Ruijie(config-router)# no capability opaque

Related Commands	Command	Description
	<b>show ip ospf</b>	Displays the global configuration of OSPF.

**Platform** N/A  
**Description**

## 2.12 clear ip ospf process

Use this command to clear and restart the OSPF instance.

**clear ip ospf** (*process-id*) **process**

Parameter Description	Parameter	Description
	<i>process-id</i>	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** The following example clears data of OSPF instance 1 and restarts OSPF instance 1.

**Examples** Ruijie#clearipospflprocess

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 2.13 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** The following example determines the best route with the RFC 2328 rule.**Examples**

```
Ruijie(config)# routerospf1
Ruijie(config-router)# nocompatibleRFC1583
```

**Related  
Commands**

Command	Description
<b>show ip ospf</b>	Displays the OSPF global configuration information

**Platform** N/A**Description**

## 2.14 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
<b>always</b>	(Optional) Generates the default route unconditionally, no matter whether the default route exists locally or not.
<b>metric</b> <i>metric</i>	(Optional) Initial metric of the default route in the range from 0 to 16777214
<b>metric-type</b> <i>type</i>	(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.
<b>route-map</b> <i>map-name</i>	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** Routing process configuration mode


## 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.

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 Examples** The following example configures that OSPF generates an external default route and injects it to the 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
<b>show ip ospf database</b>	Displays OSPF link state database.
<b>show ip route</b>	Displays the IP route table.
<b>redistribute</b>	Redistributes routes of other routing processes.

**Platform** N/A

**Description**

## 2.15 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
<i>metric</i>	Default metric of the OSPF redistribution route in the range from 1 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** The following example configures the default metric of the OSPF redistribution route as 50.

**Examples**

```
Switch(config)# router rip
Ruijie(config-router)# network 192.168.12.0
Switch(config-router)# version 2
Ruijie(config-router)# exit
Ruijie(config)# router ospf 1
Ruijie(config-router)# network 172.16.10.0 0.0.0.255 area 0
Switch(config-router)# default-metric 50
Ruijie(config-router)# redistribute rip subnets
```

**Related  
Commands**

Command	Description
<b>redistribute</b>	Redistributes the routes of other routing processes.
<b>show ip ospf</b>	Displays the OSPF global configuration information.

**Platform** N/A

**Description**

## 2.16 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
	<b>internal</b>	Enables adding the discard-route generated with the area range command
	<b>external</b>	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** The following example disables adding the discard routes generated with the area range command.

**Examples**

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# no discard-route internal
```

Related Commands	Command	Description
	<b>area range</b>	Configures the route aggregation between OSPF areas.
	<b>summary-address</b>	Configures the route aggregation out of the OSPF routing domain.

**Platform** N/A

**Description**

## 2.17 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* | **ospf** { [ **intra-area** *distance* ] [ **inter-area** *distance* ] [ **external** *distance* ] } }  
**no distance** [ **ospf** ]

Parameter Description	Parameter	Description
	<i>distance</i>	Sets the route AD in the range from 1 to 255.
	<b>intra-area</b> <i>distance</i>	Sets the AD of the intra-area route in the range from 1 to 255.
	<b>inter-area</b> <i>distance</i>	Sets the AD of the inter-area route in the range from 1 to 255.

<b>External</b> <i>distance</i>	Sets the AD of the external route in the range from 1 to 255.
---------------------------------	---

**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** OSPF Routing process configuration mode

**Usage Guide** This command is used to specify different ADs for different types of OSPF routes.

**Configuration** The following example sets the OSPF external route AD to 160.

**Examples**

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# distance ospf external 160
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 2.18 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
<i>access-list-number</i>   <b>name</b>	Uses the ACL filtering rule.
<b>gateway</b> <i>prefix-list-name</i>	Uses the gateway filtering rule.
<b>Prefix</b> <i>prefix-list-name</i>	Uses the prefix-list filtering rule.
<b>route-map</b> <i>route-map-name</i>	Uses the route-map filtering rule.
<i>interface-type</i> <i>interface-number</i>	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**

Filtering routes by using the **distribute-list in** command affects forwarding of local routes, but does not affect route computation based on LSAs. Therefore, if route filtering is configured on the ABR, Type 3 LSAs will still be generated and advertised to other areas because routes can still be computed based on LSAs. As a result, black-hole routes are generated. In this case, you can run the **area filter-list** or **area range** (containing the **not-advertise** parameter) command on the ABR to prevent generation of black-hole routes.

**Configuration** The following example configures LSA filtering.

**Examples**

```
Ruijie(config)# access-list3permit172.16.0.00.0.127.255
Ruijie(config)# router ospf 25
Ruijie(config-router)# distribute-list 3 in ethernet 0/1
```

**Related  
Commands**

Command	Description
<b>distribute-list out</b>	Filters redistribution routes.

**Platform** N/A

**Description**

## 2.19 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** ]

**no distribute-list** { [ *access-list-number* | *name* ] | **prefix** *prefix-list-name* } **out** [ **bgp** | **connected** | **isis** [ *area-tag* ] | **ospf** *process-id* | **rip** | **static** ]

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

**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** The following example filters the redistributed static routes.

#### Examples

```
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** N/A

**Description**

## 2.20 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** The following example operates OSPFv2 process 100 over SNMP:

**Examples**

```
Ruijie(config)# routerospf100
Ruijie(config-router)# enable mib-binding
```

## Related Commands

Command	Description
<b>show ip ospf</b>	Displays the OSPF global configuration information.
<b>enable traps</b>	Configures the OSPF TRAP function.

**Platform** N/A

## Description

## 2.21 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	Parameter	Description	
error		Configures all traps switches related to errors. Use this parameter to set the following specified error traps switches.	
		Ifauthfailure	Interface authentication error
		Ifconfigerror	Interface parameter configuration error
		Ifrxbadpacket	Error packets received on the interface
		Virtifauthfailure	Authentication error on the virtual interface
		Virtifconfigerror	Parameter configuration error on the virtual interface
		Virtifrxbadpacket	Error packets received on the virtual interface
isa		Configures all traps switches related to the LSA. Use this parameter to set the following specified LSA traps switches.	
		Lsdbapproachoverflow	External LSA count has reached the 90% of the upper limit.
		Lsdboverflow	External LSA count has reached the upper limit.
		Maxagelsa	LSA reaching the aging time
		Originatelsa	Generates new LSA
retransmit		Configures all traps switches related to the retransmission. Use this parameter to set the following specified retransmit traps switches.	
		Iftxretransmit	Packet retransmission on the interface
		Virtiftxretransmit	Packet retransmission on the virtual interface
state-change		Configures all traps switches related to the state change. Use this 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** The following example enables all TRAP switches of OSPFv2 process 100.

**Examples**

```
Ruijie(config)# routerospf100
Ruijie(config-router)# enable traps
```

**Related  
Commands**

Command	Description
<b>show ip ospf</b>	Displays the OSPF global configuration information.
<b>enable mib-binding</b>	Binds the OSPFv2 process with MIB.
<b>snmp-server enable traps ospf</b>	Enables the OSPF TRAP notification function.

**Platform** N/A**Description**

## 2.22 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
<b>lfa</b>	Enables the LFA (loop-free alternate) path computation.
<b>downstream-paths</b>	Enables the downstream path computation.
<b>route-map</b> <i>route-map-name</i>	Specifies the backup path through the route map.

**Defaults** The FRR function is disabled by default.

**Command****Mode** Routing process configuration mode

**Usage Guide** If the **lfa** parameter is configured, computation of the loop-free standby path is enabled. In this case, you can use the interface mode command to specify the path protection mode of the interface.

It is recommended that computation of the loop-free standby path be disabled if any of the following case exists on the network:

1. Virtual links exist.
2. Alternative ABRs exist.
3. An ASBR is also an ABR.
4. Multiple ASBRs advertise the same external route.

If both **lfa** and **downstream-paths** are configured, computation of the downstream path is enabled.

If **route-map** is configured, a standby path can be specified for a matched route through the route-map.

When the OSPF fast reroute function is used, it is recommended that BFD be enabled at the same time so that the device can quickly detect any link failure and therefore shorten the forwarding interruption time. If the interface is up or down, to shorten the forwarding interruption time during OSPF fast reroute, you can configure **carrier-delay 0** in L3 interface configuration mode to achieve the fastest switchover speed.

**Configuration** The following example enables FRR for OSPF instance 1 and associates route map *fast reroute*.

**Examples**

```
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
<b>graceful-restart helper</b>	Enables the OSPF graceful-restart helper.

#### Platform

N/A

#### Description

## 2.23 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** [ **grace-period** *grace-period* | **inconsistent-lsa-checking** ]

**no graceful-restart** [ **graceful-period** ]

#### Parameter Description

Parameter	Description
<b>grace-period</b> <i>grace-period</i>	Indicates the grace period, which is the maximum time from occurrence of an OSPF failure to completion of the OSPF GR. The value of the graceperiod varies from 1s to 1800s. The default value is 120s.
<b>inconsistent-lsa-checking</b>	Enables topological change detection. If any topological change is detected, OSPF exits the GR process to complete convergence. After

	GR is enabled, topological change detection is enabled by default.
--	--

**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** The following example enables GR for the OSPF instance 1 and sets the restart interval for GR.

## Examples

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# graceful-restart
Ruijie(config-router)# graceful-restart grace-period 60
```

## Related Commands

Command	Description
<b>graceful-restart helper</b>	Enables the OSPF graceful-restart helper.

**Platform** N/A

**Description**

## 2.24 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
<b>disable</b>	Prohibits a device from acting as a GR helper for another device.
<b>strict-lsa-checking</b>	Indicates that changes in Type 1 to Type 5 and Type 7 LSAs will be checked during the period that the device acts as a GR helper to determine whether the network changes. If the network changes, the device will stop acting as the GR helper.

<b>internal-lsa-checking</b>	Indicates that changes in Type 1 to Type 3 LSAs will be checked during the period that the device acts as a GR helper to determine whether the network changes. If the network changes, the device will stop acting as the GR helper.
------------------------------	---

**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** This command is used to configure the GR helper capability of a router. When a neighbor router implements GR, it sends a Grace-LSA to notify all neighbor routers. If the GR helper function is enabled on the local router, the local router becomes the GR helper on receiving the Grace-LSA, and helps the neighbor to complete GR. The **disable** option indicates that GR helper is not provided for any device that implements GR.

After a device becomes the GR helper, the network changes are not detected by default. If any change takes place on the network, the network topology converges after GR is completed. If you wish that network changes can be quickly detected during the GR process, you can configure **strict-lsa-checking** to check Type 1 to 5 and Type 7 LSAs that indicate the network information or **internal-lsa-checking** to check Type 1 to 3 LSAs that indicate internal routes of the AS domain. When the network scale is large, it is recommended that you disable the LSA checking options (**strict-lsa-checking** and **internal-lsa-checking**) because regional network changes may trigger termination of GR and consequently reduce the convergence of the entire network.

**Configuration** The following example disables the GF helper and modifies the policy of checking network changes.

**Examples**

```
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
<b>graceful-restart</b>	Enables GR on the device.

**Platform** N/A

**Description**

## 2.25 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  
Description**

Parameter	Description
<b>message-digest</b>	Enables MD5 authentication on the interface.
<b>null</b>	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**

The following example configures MD5 authentication for OSPF on fastEthernet 0/1.

**Examples**

```
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
<b>area authentication</b>	Enables authentication and defines authentication mode in the OSPF area.
<b>ip ospf authentication-key</b>	Configures the plain text authentication key.
<b>ip ospf message-digest-key</b>	Configures the MD5 authentication key.

**Platform**

N/A

**Description**

## 2.26 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
-----------	-------------

<b>0</b>	Displays the key in plain text.
<b>7</b>	Displays the key in cipher text.
<b>key</b>	Key containing at most eight characters.

**Defaults** It is disabled by default.

**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** The following example configures the OSPF authentication key ospfauth for fast Ethernet 0/1.

**Examples**

```
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
<b>area authentication</b>	Enables OSPF area authentication and defines authentication mode
<b>ip ospf authentication</b>	Enables authentication on the interface and defines authentication mode

**Platform** N/A

**Description**

## 2.27 ip ospf bfd

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 ]**

<b>Parameter Description</b>	Parameter	Description
	<b>disable</b>	Disables BFD on the specified OSPF interface.
<b>Defaults</b>	BFD is not configured by default, and the BFD configuration in OSPF process configuration mode shall prevail.	
<b>Command Mode</b>	Interface configuration mode	
<b>Usage Guide</b>	<p>The interface-based configuration takes precedence over the <b>bfd all-interfaces</b> command used in process configuration mode.</p> <p>Based on the actual environment, you can run the <b>ip ospf bfd</b> command to enable BFD on a specified interface for link detection, or run the <b>bfd all-interfaces</b> command in OSPF process configuration mode to enable BFD on all interface of the OSPF process, or run the <b>ospf bfd disable</b> command to disable BFD on a specified interface.</p>	
<b>Configuration Examples</b>	<pre>Ruijie(config)# interface fastethernet 0/1 Ruijie(config-if-FastEthernet 0/1)# ip address 172.16.1.1 255.255.255.0 Ruijie(config-if-FastEthernet 0/1)# ip ospf bfd</pre>	
<b>Related Commands</b>	Command	Description
	<b>router ospf</b>	Creates the OSPF routing process and enters routing process configuration mode.
	<b>bfd all-interfaces</b>	Enables the BFD on all OSPF interfaces.
<b>Platform Description</b>	N/A	

## 2.28 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**

<b>Parameter Description</b>	Parameter	Description
	<i>cost</i>	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** The following example configures the OSPF cost of fastEthernet 0/1 to 100.**Examples**

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# ip ospf cost 100
```

**Related  
Commands**

Command	Description
<b>bandwidth</b>	Specifies the interface bandwidth. This setting does not affect the data transmission rate.
<b>show ip ospf</b>	Displays the OSPF global configuration information

**Platform** N/A**Description**

## 2.29 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** The following example stops sending LSA update packets of fastEthernet 0/1.

**Examples**

```
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** N/A  
**Description**

## 2.30 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
	<i>seconds</i>	Defines the interval for determining the neighbor death in seconds. The range is from 0 to 2,147,483,647.
	<b>minimal</b>	Indicates that the Fast Hello function is enabled to set the dead interval to 1s.
	<b>hello-multiplier</b> <i>multiplier</i>	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.

**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 from 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.

No matter whether the Fast Hello function is enabled, the death interval must be consistent and the **hello-multiplier** values can be inconsistent on routers at both ends of the virtual link. Ensure that at least one Hello packet can be received within the death interval.

Run the **show ip ospf virtual-links** command to monitor the death interval and Fast Hello interval configured for the virtual link.

The **dead-interval minimal hello-multiplier** and **hello-interval** parameters introduced for the Fast Hello function cannot be configured simultaneously.

**Configuration Examples** The following example configures the interval for determining the death of the OSPF neighbor on fastEthernet 0/1 to 30 seconds.

```
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 30
```

The following example configures the value of hello-multiplier to 3.

```
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
<b>ip ospf hello-interval</b>	Specifies the interval at which the OSPF sends Hello packets
<b>show ip ospf interface</b>	Displays OSPF interface information.

**Platform** N/A  
**Description**

## 2.31 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** The following example prevents the specified interface from generating OSPF packets.

**Examples**

```
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 disable all
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 2.32 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
<b>node</b>	Enables LFA node protection.
<b>link-node</b>	Enables LFA link node protection.
<b>disable</b>	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** The following example sets OSPF LFA fast reroute to link and node protection:

**Examples**

```
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
<b>fast-reroute</b>	Enables OSPF fast reroute.

**Platform** N/A  
**Description**

## 2.33 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 the remaining bandwidth of an interface is small or if the interface and its active interface may fail at



the same time, the interface cannot be used as a standby interface. Therefore, you need to run this command in interface configuration mode to prevent this interface from becoming a standby interface during OSPF fast reroute computation. After this command is executed, the standby interface is selected from other interface.

This command does not take effect if **fast-reroute route-map** is configured.

**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
<b>fast-reroute</b>	Enables OSPF fast reroute.

**Platform Description** N/A

## 2.34 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
<i>seconds</i>	Interval for sending Hello packets in seconds. The range is from 1 to 65535.

**Defaults**

The defaults are as follows:

10seconds for Ethernet

10seconds for PPP or HDLC encapsulated interfaces

10seconds for frame relay PTP interfaces

30seconds 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** The following example configures the interval of sending the Hello packets on fastEthernet 0/1 to 15.

**Examples**

```
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 hello-interval 15
```

**Related  
Commands**

Command	Description
<b>ip ospf dead-interval</b>	Sets the interval for determining the death of the OSPF neighbor.

**Platform** N/A

**Description**

## 2.35 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
<i>key</i>	Key of up to 16 characters
<b>0</b>	Displays the key in plain text.
<b>7</b>	Displays the key in cipher text.
<i>key-id</i>	Key identifier in the range from 1 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-key 10md5
hello10
```

#### Related Commands

Command	Description
<b>area authentication</b>	Enables OSPF area authentication and defines authentication mode.
<b>ip ospf authentication</b>	Enables authentication on the interface and defines authentication mode.

**Platform** N/A

**Description**

## 2.36 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** The following example disables the MTU check function on fastEthernet 0/1.

**Examples**

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# ip ospf mtu-ignore
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A  
**Description**

## 2.37 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
<b>broadcast</b>	Sets the OSPF network type as the broadcast type.
<b>non-broadcast</b>	Sets the OSPF network type as the non-broadcast multi-path access type, i.e. NBMA network.
<b>point-to-multipoint [non-broadcast]</b>	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.
<b>point-to-point</b>	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** The broadcast type requires that the interface must have the broadcast capability.

The P2P type requires that the interfaces are interconnected in one-to-one manner.

The NBMA type requires full-meshed connections, and all interconnected routers can directly communicate with each other.

The P2MP type does not raise any requirement.

**Configuration** The following example configures the frame relay interface network as the P2P type.**Examples**

```
Ruijie(config)# interface Serial 1/0
Ruijie(config-Serial 1/0)# ip address 172.16.24.4 255.255.255.0
Ruijie(config-Serial 1/0)# encapsulation frame-relay
Ruijie(config-Serial 1/0)# ip ospf network point-to-point
```

The following example configures the frame relay interface network as the NBMA type.

```
Ruijie(config)# interface Serial 1/0
Ruijie(config-Serial 1/0)# ip address 172.16.24.4 255.255.255.0
Ruijie(config-Serial 1/0)# encapsulation frame-relay
Ruijie(config-Serial 1/0)# ip ospf network non-broadcast
Ruijie(config-Serial 1/0)# exit
Ruijie(config)# router ospf 20
Ruijie(config-router)# neighbor 172.16.24.2 priority 1 poll-interval 150
```

**Related  
Commands**

Command	Description
<b>dialer map ip</b>	Defines the mapping between IP address and dialing number.
<b>frame-relay map</b>	Defines the mapping between IP address and frame DLCI.
<b>neighbor(OSPF)</b>	Defines the IP address of neighbor applicable to NBMA network type and point-to-multipoint non-broadcast type only.
<b>X25 map</b>	Defines the mapping between IP address and X.25 network address.

**Platform** N/A**Description**

## 2.38 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**

<b>Parameter Description</b>	Parameter	Description
	<i>priority</i>	Sets the OSPF priority of the interface in the range from 0 to 255.
<b>Defaults</b>	The default is 1.	
<b>Command Mode</b>	Interface configuration mode	
<b>Usage Guide</b>	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.	
<b>Configuration Examples</b>	The following example configures the priority of fastethernet 0/1 as 0. <pre>Switch(config)#interface fastethernet 0/1 Ruijie(config-if-FastEthernet 0/1)# ipospfpriority0</pre>	
<b>Related Commands</b>	Command	Description
	<b>ip ospf network</b>	Configures the network type of the interface.
<b>Platform Description</b>	N/A	

## 2.39 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**

<b>Parameter Description</b>	Parameter	Description
	<i>seconds</i>	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.
<b>Defaults</b>	The default is 5.	
<b>Command</b>	Interface configuration mode	

**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
<b>area virtual-link</b>	Defines an OSPF virtual link.

**Platform** N/A

**Description**

## 2.40 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** The following example disables the source address check function in the point-to-point link.

**Examples**

```
Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip ospf source-check-ignore
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A  
**Description**

## 2.41 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
<i>seconds</i>	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** The following example configures the transmission delay of fastEthernet 0/1 as 10.

**Examples**

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# ip ospf transmit-delay 10
```

**Related**

Command	Description
---------	-------------



Commands		
	area virtual-link	Defines an OSPF virtual link.

**Platform** N/A

**Description**

## 2.42 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** The following example enables the ISPF function.

**Examples**  
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 N/A

Description

## 2.43 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  
Description

Parameter	Description
<b>detail</b>	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 The following example logs the neighbor state changes.

Examples

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# log-adj-changes detail
```

Related  
Commands

Command	Description
<b>show ip ospf</b>	Displays the OSPF global configuration information.

Platform N/A

Description

## 2.44 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

Parameter	Description
-----------	-------------

<b>Description</b>		
	<i>number</i>	Maximum number of DD packets in the range from 1 to 65535
<b>Defaults</b>	The default is 5.	
<b>Command</b>		
<b>Mode</b>	Routing process configuration mode	
<b>Usage Guide</b>	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.	
<b>Configuration</b>	The following example sets the maximum number of DD packets to 4.	
<b>Examples</b>	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.	
	<pre>Ruijie(config)# routerospf10 Ruijie(config-router)# max-concurrent-dd4</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>router ospf max-concurrent-dd</b>	Sets the maximum number of neighbors allowed in concurrent interaction for all OSPF routing processes.
<b>Platform</b>	N/A	
<b>Description</b>		

## 2.45 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* ]]  
**no max-metric router-lsa** [**external-lsa** [*max-metric-value* ]][**include-stub** ][**on-startup**  
 [*seconds* ]][ **summary-lsa** [*max-metric-value* ]]

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<b>router-lsa</b>	Configures the maximum metric (0xFFFF) of non-stub links in the Router LSA.
	<b>external-lsa</b>	Uses the maximum metric instead of the external-lsa metric (including the Type-5 and Type-7).
	<i>max-metric-value</i>	Maximum metric of the LAS. The range is 1 to 16777215. The default

	value is 16711680,
<b>include-stub</b>	Configures the maximum metric of the stub links in the Router LSA.
<b>on-startup</b>	Advertises the maximum metric when the routing device starts up.
<i>seconds</i>	Interval of advertising the maximum metric. The range is 5 to 86400. The default value is 600 seconds.
<b>summary-lsa</b>	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.

**Configuration** The following example configures the LSA maximum metric as 100 seconds after starting the device.

## Examples

```
Ruijie(config)# router ospf 20
Ruijie(config-router)# max-metric router-lsa on-startup 100
```

Related Commands	Command	Description
	<b>show ip ospf</b>	Displays the OSPF related configurations.

**Platform** N/A

**Description**

## 2.46 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
	<i>ip address</i>	IP address of the neighbor
	<b>poll-interval</b> <i>seconds</i>	(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.
	<b>priority</b> <i>priority</i>	(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.
	<b>cost</b> <i>cost</i>	(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** 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.

**Examples**

```
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
<b>ip ospf priority</b>	Sets the interface priority.
<b>ip ospf network</b>	Sets the network type

**Platform** N/A

**Description**

## 2.47 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
<i>ip-address</i>	IP address of the interface
<i>wildcard</i>	Defines the comparison bits in the IP address, with 0 for exact match and 1 for no comparison
<i>area-id</i>	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.

**Configuration** The following example defines:

**Examples** 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
<b>router ospf</b>	Creates the OSPF routing process.

**Platform** N/A

**Description**

## 2.48 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
<i>number</i>	Maximum number of LSAs. The range is from 1 to 4294967294.
<b>hard</b>   <b>soft</b>	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 Examples** The following example configures that OSPF instance 10 will be shut down when there are more than 10 LSAs.

```
Ruijie(config)# router ospf 10
Ruijie(config-router)# overflow database 10 hard
```

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A  
**Description**

## 2.49 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-db-size wait-time*

**no overflow database external**

**Parameter Description**

Parameter	Description
<i>max-db-size</i>	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.
<i>wait-time</i>	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(config)# routerospf10
Ruijie(config-router)# overflow database external10 3
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A  
**Description**

## 2.50 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
<b>clear ip ospf process</b>	Resets the OSPF instances.
<b>show ip protocols ospf</b>	Displays the OSPF information.

**Platform** N/A  
**Description**

## 2.51 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
<i>interface-type interface-number</i>	Interface to be set as a passive interface
<b>default</b>	Sets all the interfaces as passive interfaces
<i>interface-type interface-number ip-address</i>	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** The following example configures fastEthernet 0/1 as a passive interface and the IP address of the

**Examples**

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
<b>show ip ospf interface</b>	Displays the configuration information of the interface.

**Platform**

N/A

**Description**

## 2.52 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** } [ { **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** } [ { **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
<b>bgp</b>	Redistribution from bgp
<b>connected</b>	Redistribution from direct routes
<b>isis</b> [ <i>area-tag</i> ]	Redistribution from an IS-IS instance specified in area-tag
<b>ospf</b> <i>process-id</i>	Redistribution from an ospf instance specified in process-id in the range from 1 to 65,535
<b>rip</b>	Redistribution from rip
<b>static</b>	Redistribution from static routes
<b>level-1</b>   <b>level-1-2</b>   <b>level-2</b>	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.
<b>match</b>	Filters specified routes for configuring OSPF route redistribution. By default, all the OSPF routes are redistributed.
<b>metric</b> <i>metric-value</i>	Specifies the metric of an OSPF external LSA in the range from 0 to 16777214.
<b>metric-type</b> {1 2}	Sets the external routing type as E-1 or E-2.
<b>route-map</b> <i>route-map-name</i>	Redistribution filter rule
<b>subnets</b>	Redistributes the routes of non standard networks.

<b>tag</b> <i>tag-value</i>	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-2 command 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 isisis-001
Ruijie(config-router)# redistribute isisis-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
<b>summary-address</b>	Configures the aggregate route for the external route of the OSPF route area.
<b>default-metric</b>	Sets the default metric of the OSPF redistribution route.

**Platform** N/A  
**Description**

## 2.53 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
<i>process-id</i>	ID of an OSPF process. If the process ID is not configured, process 1 is configured.
<i>vrf-name</i>	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
	<b>show ip protocols</b>	Displays the routing protocol information.
	<b>show ip ospf</b>	Displays the OSPF information.

**Platform** N/A

**Description**

## 2.54 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
	<i>number</i>	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** 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# configure terminal
Ruijie(config)# router ospfmax-concurrent-dd4
```

Related Commands	Command	Description
	<b>max-concurrent-dd</b>	Sets the maximum number of the neighbors that the OSPF routing process can concurrently interact with.

**Platform** N/A

**Description**

## 2.55 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
<i>router-id</i>	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** The following example modifies the router ID to 0.0.0.36.

### Examples

```
Ruijie(config)# router ospf 20
Ruijie(config-router)# router-id 0.0.0.36
```

### Related Commands

Command	Description
<b>show ip protocols</b>	Displays the routing protocol information.

**Platform** N/A

**Description**

## 2.56 show ip ospf

Use this command to display the OSPF information.

**show ip ospf** [*process-id*]

### Parameter Description

Parameter	Description
<i>process-id</i>	OSPF process ID

**Defaults** N/A

**Command****Mode** Privileged EXEC mode**Usage Guide** This command displays the information of the OSPF routing process.**Configuration** The following example displays the output of the **show ip ospf** command.**Examples**

```
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 is enabled
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 msec
Minimum hold time for LSA throttle 5000 msec
Maximum wait time for LSA throttle 5000 msec
Lsa Transmit Pacing timer 40 msec, 10 LS-Upd
Minimum LSA arrival 1000 msec
Pacing lsa-group: 240 secs
Number of incoming 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 Adjacency 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

## 2.57 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-routers**

**Parameter  
Description**

Parameter	Description
<i>process-id</i>	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** The following example displays the output of the **show ip ospf border-mrouters** command.

**Examples**

```
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** N/A

**Description**

## 2.58 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* | *ip-address* ] ] **database** [ { **asbr-summary** | **external** | **network** | **nssa-external** | **opaque-area** | **opaque-as** | **opaque-link** | **router** | **summary** } ] [ { **adv-router** *ip-address* | **self-originate** } ] [ *link-state-id* | **brief** ] [ **database-summary** | **max-age** | **detail** ]

**Parameter  
Description**

Parameter	Description
<i>area-id</i>	(Optional) Displays the area ID.
<b>adv-device</b>	(Optional) Displays the LSA information generated by the specified advertising device.
<i>link-state-id</i>	(Optional) Displays the LSA information of the specified OSPF link

	state identifier.
<b>self-originate</b>	(Optional) Displays the LSA information generated by the device itself.
<b>Max-age</b>	(Optional) Displays the LSAs aged.
<b>router</b>	(Optional) Displays the OSPF device LSA information.
<b>network</b>	(Optional) Displays the OSPF network LSA information.
<b>summary</b>	(Optional) Displays the OSPF summary LSA information.
<b>asbr-summary</b>	(Optional) Displays the ASBR summary LSA information.
<b>external</b>	(Optional) Displays the OSPF external LSA information.
<b>nssa-external</b>	(Optional) Displays the category 7 OSPF external LSA information.
<b>opaque-area</b>	(Optional) Displays type 10 LSAs.
<b>opaque-as</b>	(Optional) Displays type 11 LSAs.
<b>opaque-link</b>	(Optional) Displays type 9 LSAs.
<b>database-summary</b>	(Optional) Displays the statistics of LSAs of the link state database.
<b>detail</b>	Displays detailed information of LSAs of the OSPF.
<b>brief</b>	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** The following example displays the output of the **show ip ospf database** command.

#### Examples

```
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 Description

N/A

## 2.59 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
	<i>process-id</i>	OSPF process ID
	<i>interface-type</i>	(Optional) type of the specified interface
	<i>interface-number</i>	(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** The following example displays the output of the **show ip ospf interface fastEthernet 0/1** command:

**Examples**

```
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** N/A  
**Description**

## 2.60 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
	<i>process-id</i>	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** The following displays the ISPF calculation count in the OSPF area.

**Examples**

```
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** N/A

**Description**

## 2.61 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
	<b>detail</b>	(Optional) Displays the neighbor details.
	<i>interface-type</i>	(Optional) Displays the neighbor information of the specified interface

<i>interface-number</i>	
<i>neighbor-id</i>	(Optional) Displays the information of the specified neighbor
<b>statistics</b>	(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** The following example displays the output of the **show ip ospf neighbor** command.

**Examples**

```
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** N/A  
**Description**

## 2.62 show ip ospf route

Use this command to display the OSPF routes.

**show ip ospf** [ *process-id* ] **route** [ **count** | *ip-address mask* ]

**Parameter  
Description**

Parameter	Description
<i>process-id</i>	OSPF process ID. All OSPF routes will be displayed without an ID specified.
<b>count</b>	Statistics of various OSPF routes
<i>ip-address mask</i>	Statistics of routes which have a specified prefix and mask.

**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** The following example displays the output of the **show ip ospf route** command.

**Examples**

```
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** N/A**Description**

## 2.63 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
<i>process-id</i>	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** The following example displays the output of the **show ip ospf [process-id] spf** command:

**Examples** 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
	<b>show ip ospf</b>	Displays the OSPF summary.

Platform N/A

Description

## 2.64 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
	<i>process-id</i>	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** The following example displays the output of the **show ip ospf summary-address** command:

**Examples**

```
Ruijie# show ip ospf summary-address
```

```
OSPF Process 1, Summary-address:
```

```
172.16.0.0/16, Metric 20, Type 2, Tag 0, Match count 3, advertise
```

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 N/A

**Description**

## 2.65 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** *adv-router-id* [ *router-id* ]  
/ *self-originate* [ *router-id* ] ]

**Parameter  
Description**

Parameter	Description
<i>process-id</i>	OSPF process ID.
<i>area-id</i>	Displayed area ID
<b>topology</b>	Displays a specified OSPF process and topology information summary of an area.
<b>adv-router</b>	Displays topology information of a specified device. This specified device must be a directly connected neighbor of the current device.
<b>self-originate</b>	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** The following example displays the result of the show **ip ospf topology** command:

**Examples**

```
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	Child 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** N/A  
**Description**

## 2.66 show ip ospf virtual-link

Use this command to display the OSPF virtual link information.

**show ip ospf** [ *process-id* ] **virtual-link** [ *ip-address* ]

Parameter Description	Parameter	Description
	<i>process-id</i>	ID of the OSPF process. All OSPF routing processes will be displayed if this parameter is not configured.
	<i>ip-address</i>	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** The following is the output of the **show ip ospf virtual-links** command:

**Examples**

```
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** N/A

**Description**

## 2.67 summary-address

Use this command to configure the aggregate route out of the OSPF routing domain. Use the **no** form of this command to 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
<i>ip address</i>	IP address of the aggregate route
<i>net-mask</i>	Network mask of the aggregate route
<b>not-advertise</b>	Does not advertise the aggregate route. If the parameter is not configured, the aggregate route is advertised.
<b>tag</b> <i>value</i>	Sets the tag value of an aggregate route. The range is from 0 to 4,294,967,295.
<b>cost</b> <i>cost</i>	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** The following example generates an external aggregate route 100.100.0.0/16.

**Examples**

```
Ruijie(config)# router ospf20
Ruijie(config-router)# summary-address 100.100.0.0 255.255.0.0
Ruijie(config-router)# redistribute static subnets
Ruijie(config-router)# network 200.2.2.0 0.0.0.255 area 1
Ruijie(config-router)# network 172.16.24.0 0.0.0.255 area 0
Ruijie(config-router)# area nssa
```

**Related  
Commands**

Command	Description
<b>area-range</b>	Configures route convergence on the OSPF area border device.
<b>redistribute</b>	Redistributes routes of other routing processes.

**Platform** N/A

**Description**

## 2.68 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
<i>arrival-time</i>	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** The following example configures the time delay for the same LSA as 2seconds.

**Examples**

```
Ruijie(config)# router ospf1
Ruijie(config-router)# timers arrival-time 2000
```

Related Commands	Command	Description
	<b>show ip ospf</b>	Displays the OSPF information.

**Platform** N/A

**Description**

## 2.69 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
	<i>seconds</i>	Parameter used for LSA pacing, checksum calculation, and aging interval. The range is from 10 to 1800 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** The following example configures the pacing time as 120 seconds.

**Examples**

```
Ruijie(config)# deviceospf 20
Ruijie (config-router)# timers paing lsa-group 120
```

Related Commands	Command	Description
	<b>show ip ospf</b>	Displays the OSPF information.

**Platform** N/A

**Description**

## 2.70 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
<i>transmit-time</i>	Configures the interval of sending the LSA grouping. The range is from 10 to 1000.
<i>transmit-count</i>	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: 1

**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**

The following example sets the interval of sending the LS-UPD packets as 50ms, the packets number as 20.

**Examples**

```
Ruijie(config)# routerospf1
Ruijie(config-router)# timers pacing lsa-transmit 50 20
```

**Related  
Commands**

Command	Description
<b>show ip ospf</b>	Displays the OSPF process information, including the router ID.

**Platform**

N/A

**Description**

## 2.71 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
<i>spf-delay</i>	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.
<i>spf-holdtime</i>	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
<b>show ip ospf</b>	Displays the configuration information of the ospf.
<b>timers throttle spf</b>	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** N/A

**Description**

## 2.72 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
<i>delay-time</i>	Configures the time delay of generating the LSA first. The range is from 1 to 600000.
<i>hold-time</i>	Configures the minimum interval of refreshing the LSA between the first time and second time. The range is from 1 to 600000.
<i>max-wait-time</i>	Configures the maximum interval of successive refreshing the LSA., which determines whether the LSA is refreshed successively. The range is from 1 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
	<b>show ip ospf</b>	Displays the configuration information of the ospf

Platform N/A

Description

## 2.73 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
	<b>inter-area</b>	Calculates the inter area routes.
	<i>ia-delay</i>	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.
	<b>ase</b>	Calculates the external routes.
	<i>ase-delay</i>	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	Command	Description
---------	---------	-------------



Commands		
	N/A	N/A

**Platform** N/A

**Description**

## 2.74 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
	<i>spf-delay</i>	Defines the SPF calculation waiting period, in the unit of milliseconds, in the range from 1 to 600,000. After receiving the topology change, the OSPF routing process must wait for the specified period to start the SPF calculation.
	<i>spf-holdtime</i>	Defines the interval between two SPF calculations in seconds in the range from 1 to 600,000.
	<i>spf-max-waittime</i>	Defines the maximum interval between two SPF calculations, in milliseconds in the range from 1 to 60,000.

**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 of `spf-holdtime` will be set to be equal to the value of `spf-delay`;

The value of `spf-max-waittime` 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
<b>show ip ospf</b>	Displays the configuration information of OSPF
<b>timers spf</b>	Configures the SPF calculation delay. This command is supported in versions earlier than RGOS 10.4. It is recommended to replace the <code>timers spf</code> command with the <code>timers throttle spf</code> command.

**Platform** N/A

**Description**

## 2.75 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** The following example disables the OSPF two-way-maintain function.

**Examples**

```
Ruijie(config)# routerospf1
Ruijie(config-router)# notwo-way-maintain
```

**Related  
Commands**

Command	Description
<b>show ip ospf</b>	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** | **sha1**] [**0** | **7**] *key*

**no area** *area-id* **authentication**

#### Parameter Description

Parameter	Description
<i>area-id</i>	Specifies an area ID. It can be an integer or the prefix of an IPv4 address.
<i>spi</i>	Specifies a security parameter index, in the range from 256 to 4294967295.
<b>md5</b>	Specifies a message digest 5 (MD5) authentication mode.
<b>sha1</b>	Specifies a secure hash algorithm 1 (SHA1) authentication mode.
<b>0</b>	Indicates that a key is displayed in a plain-text format.
<b>7</b>	Indicates that a key is displayed in a cipher-text format.
<i>key</i>	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 aaaaaaaaaaaaaaaaaaaaaaaaaaaaaa.

```
Ruijie(config-router)# area 1 authentication ipsec spi 300 md5
aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa
```

#### Related Commands

Command	Description
---------	-------------

<b>ipv6 ospf authentication</b>	Specifies interface authentication.
<b>area virtual-link authentication</b>	Specifies virtual link authentication.

**Platform** N/A

**Description**

## 3.2 area default-cost

Use this command to set the cost of the default route for the ABR in the stub 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
<i>area-id</i>	Area ID of the stub area. It can be an integer or an IPv4 prefix.
<i>cost</i>	Cost of the default route of the stub 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** The following example sets the cost of the default route of stub area 50 to 100.

**Examples**

```
ipv6 router ospf 1
area 50 stub
area 50 default-cost 100
```

**Related  
Commands**

Command	Description
<b>area stub</b>	Sets a stub area.

**Platform** N/A

**Description**

## 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
<i>area-id</i>	Specifies an area ID. It can be an integer or the prefix of an IPv4 address.
<i>spi</i>	Specifies a security parameter index, in the range from 256 to 4294967295.
<b>null</b>	Specifies the null encryption mode.
<b>md5</b>	Specifies the MD5 authentication mode.
<b>sha1</b>	Specifies the SHA1 authentication mode.
<b>0</b>	Indicates that a key is displayed in the plain-text format.
<b>7</b>	Indicates that a key is displayed in the cipher-text format.
<i>Key</i>	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
aaaaaaaaaaaaaaaaaaaaaaaaaaaaa
```

**Related  
Commands**

Command	Description
<b>ipv6 ospf encryption</b>	Specifies interface encryption authentication.
<b>area virtual-link encryption</b>	Specifies virtual link encryption authentication.

**Platform  
Description** N/A

## 3.4 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
<i>area-id</i>	ID of the area in which the addresses are converged. It can be an integer or an IPv4 prefix.
<i>ipv6-prefix/prefix-length</i>	Range of the converged addresses.
<b>advertise</b>	Advertises the range of converged addresses.
<b>not-advertise</b>	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**

The following example converges the routes in area 1.

**Examples**

```
ipv6 router ospf 1
area 1 range 2001:abcd:1:2::/64
```

**Related  
Commands**

Command	Description
<b>summary-prefix</b>	Sets the range of the external routes to be converged.

**Platform  
Description**

N/A

## 3.5 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
<i>area-id</i>	ID of the stub area. It can be an integer or an IPv6 prefix.
<b>no-summary</b>	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 LSA 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

The following example enables the ABR in stub area 10 to advertise the default route to the stub area.

### Examples

```
ipv6 router ospf 1
area 10 stub
area 10 stub no-summary
```

### Related Commands

Command	Description
<b>area default-cost</b>	Sets the cost of the default route in the stub area.

### Platform

N/A

### Description






### 3.6 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
<i>area-id</i>	ID of the area in which the virtual link is located. It can be an integer or an IPv6 prefix.
<i>Router-id</i>	Neighbor router ID of the virtual link.
<b>hello-interval</b> <i>seconds</i>	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.
<b>dead-interval</b> <i>seconds</i>	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.
<b>retransmit-interval</b> <i>seconds</i>	Interval for retransmitting LSA on the local interface of the virtual link . The range is from 1 to 65535 in the unit of seconds.
<b>transmit-delay</b> <i>seconds</i>	Delay on the local interface of the virtual link in sending LSA. The range is from 1 to 65535 in the unit of seconds.
<b>instnace</b> <i>instance-id</i>	Specifies the instance corresponding to the virtual link. No virtual link can be established between different instances. Range: 0.-255
<b>authentication ipsec spi</b> <i>spi</i> [ <b>md5</b>   <b>sha1</b> ] [ <b>0</b>   <b>7</b> ] <i>key</i>	<p>Specifies OSPFv3 authentication.</p> <p> Authentication configuration on two neighboring devices must be consistent. The <b>service password-encryption</b> command enables a key to be displayed in the cipher-text format.</p> <p><i>spi</i> specifies a security parameter index, in the range from 256 to 4294967295.</p> <p><b>md5</b> specifies the MD5 authentication mode.</p> <p><b>sha1</b> specifies the SHA1 authentication mode.</p> <p>0 indicates that a key is displayed in the plain-text format.</p> <p>7 indicates that a key is displayed in the cipher-text format.</p> <p><i>key</i> specifies an authentication key.</p>
<b>encryption ipsec spi</b> <i>spi</i> <b>esp null</b> [ <b>md5</b>   <b>sha1</b> ] [ <b>0</b>   <b>7</b> ] <i>key</i>	<p>Specifies OSPFv3 encryption authentication.</p> <p> Authentication configuration on two neighboring devices must be consistent. The <b>service password-encryption</b> command enables a key to be displayed in the cipher-text format.</p>

	<p><i>spi</i> specifies a security parameter index, in the range from 256 to 4294967295.</p> <p><b>null</b> specifies the null encryption mode.</p> <p><b>md5</b> specifies the MD5 authentication mode.</p> <p><b>sha1</b> specifies the SHA1 authentication mode.</p> <p>0 indicates that a key is displayed in the plain-text format.</p> <p>7 indicates that a key is displayed in the cipher-text format.</p> <p><i>key</i> specifies an authentication key.</p>
<p><b>authentication ipsec spi</b>  <i>spi</i> [ <b>md5</b>   <b>sha1</b> ] [ <b>0</b>   <b>7</b> ] <i>key</i></p>	<p>Specifies OSPFv3 authentication.</p> <hr/> <p> Authentication configuration on two neighboring devices must be consistent. The <b>service password-encryption</b> command enables a key to be displayed in the cipher-text format.</p> <hr/> <p><i>spi</i> specifies a security parameter index, in the range from 256 to 4294967295.</p> <p><b>md5</b> specifies the MD5 authentication mode.</p> <p><b>sha1</b> specifies the SHA1 authentication mode.</p> <p>0 indicates that a key is displayed in the plain-text format.</p> <p>7 indicates that a key is displayed in the cipher-text format.</p> <p><i>key</i> specifies an authentication key.</p>

**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**

The following example configures a virtual link.

**Examples**

```
Ruijie(config)# ipv6 router ospf 1
Ruijie(config-router)# area 1 virtual-link 192.1.1.1
```

**Related****Commands**

Command	Description
---------	-------------

<b>show ipv6 ospf</b>	Displays the OSPFv3 routing process information.
<b>show ipv6 ospf neighbor</b>	Displays the OSPFv3 neighbor information.
<b>show ipv6 ospf virtual-links</b>	Displays the OSPFv3 virtual link information.

**Platform** N/A

**Description**

## 3.7 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  
Description**

Parameter	Description
<b>reference-bandwidth</b> <i>ref-bw</i>	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
<b>ipv6 ospf cost</b>	Sets the cost of an interface.
<b>show ipv6 ospf</b>	Displays the OSPFv3 routing process information.

**Platform** N/A

**Description**

### 3.8 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 **bdf all-interfaces** in the routing process configuration mode.

**Configuration** N/A

#### Examples

#### Related Commands

Command	Description
<b>ipv6 router ospf</b> <i>process-id</i>	Enables the OSPFv3 routing process and enter into the routing process configuration mode.
<b>ipv6 ospf bfd [ disable ]</b>	Enables or disable the BFD on the specified OSPFv3 interfaces.

#### Platform

N/A

#### Description

### 3.9 clear ipv6 ospf process

Use this command to clear and restart the OSPF process.

**clear ipv6 ospf { process | process-id }**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<i>process-id</i>	OSPF process ID, in the range from 1 to 65535
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Privileged EXEC mode	
<b>Usage Guide</b>	<p>In normal case, it is not necessary to use this command.</p> <p>Use the parameter <i>process-id</i> to clear only one specific OSPFv3 instance. If no <i>process-id</i> is specified, all the OSPFv3 instances will be cleared.</p>	
<b>Configuration Examples</b>	<p>The following example restarts the OSPF process.</p> <pre>enble clear ipv6 ospf process</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	N/A	N/A
<b>Platform Description</b>	N/A	

### 3.10 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* ]

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<b>always</b>	( Optional ) It makes OSPFv3 generate the default route unconditionally, no matter whether the default route exists locally or not.
	<b>metric</b> <i>metric</i>	(Optional) Initial metric value of the default route, in the range from 0 to 16777214
	<b>metric-type</b> <i>type</i>	(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.
	<b>route-map</b> <i>map-name</i>	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.

The routers in the stub area cannot generate external default routes.

**Configuration** The following example generates a default route.

**Examples**

```
default-information originate always
```

**Related Commands**

Command	Description
<b>redistribute</b>	Redistribute routes.
<b>show ipv6 ospf</b>	Displays the OSPFv3 routing process information.
<b>show ipv6 ospf database</b>	Displays the OSPFv3 link state database information.

**Platform** N/A

**Description**

### 3.11 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
<i>metric-value</i>	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**

The following example sets the default metric for the routes to be redistributed to 10.

**Examples**

```
default-metric 10
```

**Related  
Commands**

Command	Description
<b>redistribute</b>	Redistributes the routes.
<b>show ipv6 ospf</b>	Displays the OSPFv3 routing process information.

**Platform**

N/A

**Description**

## 3.12 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
<i>distance</i>	Sets the management distance of the route, in the range from 1 to 255.
<b>intra-area</b> <i>distance</i>	Sets the management distance of the intra-area route, in the range from 1 to 255.

<b>inter-area distance</b>	Sets the management distance of the inter-area route, in the range from 1 to 255.
<b>external distance</b>	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** the following example sets the OSPFv3 external route management distance to 160.

**Examples**

```
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** N/A  
**Description**

### 3.13 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
	<i>name</i>	Specifies an ACL filtering rule.



<b>prefix-list</b> <i>prefix-list-name</i>	Specifies a prefix list filtering rule.
<i>interface-type</i> <i>interface-number</i>	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** The following example filters routes that are computed based on Link State Advertisement (LSA).

**Examples**

```
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
<b>area range</b>	Configures route aggregation in an area.

**Platform** N/A

**Description**

### 3.14 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
<i>name</i>	Specifies the ACL filtering rule.

<b>prefix-list</b> <i>prefix-list-name</i>	Specifies the prefix list filtering rule.
<b>bgp</b>   <b>connected</b>   <b>isis</b> [ <i>area-tag</i> ]   <b>ospf</b> process-id   <b>rip</b>   <b>static</b>	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
```

<b>Related Commands</b>	Command	Description
	<b>redistribute</b>	Re-distributes routes that are carried by other routing processes.

**Platform** N/A

**Description**

## 3.15 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**

<b>Parameter Description</b>	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** OSPFv3 MIB has no configuration information about OSPFv3 processes. You can operate only one OSPFv3 process through SNMP. OSPFv3 MIB is bound to the OSPFv3 process with the smallest process number by default. Users' operations take effect on this process.

To operate a specific OSPFv3 process through SNMP, you can bind OSPFv3 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
<b>show ipv6 ospf</b>	Displays global OSPFv3 configuration information.
<b>enable traps</b>	Enables the OSPFv3 trap function.

**Platform** N/A

**Description**

## 3.16 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 | VirtIfStateChange | VirtNbrStateChange | RestartStatusChange | NbrRestartHelperStatusChange | VirtNbrRestartHelperStatusChange ] ]**

**no enable traps [ error [ IfConfigError | IfRxBadPacket | VirtIfConfigError | VirtIfRxBadPacket ] | state-change [ IfStateChange | NbrStateChange | VirtIfStateChange | VirtNbrStateChange | RestartStatusChange | NbrRestartHelperStatusChange | VirtNbrRestartHelperStatusChange ] ]**

**Parameter  
Description**

Parameter	Description
<b>Error</b>	Configures all error-related trap types. This keyword can also specify the following types of error traps:
	<b>IfConfigError</b> Specifies an interface parameter error;
	<b>IfRxBadPacket</b> Specifies incorrect packets received by an interface;
	<b>VirtIfConfigError</b> Specifies a parameter error on a virtual interface;
	<b>VirtIfRxBadPacket</b> Specifies incorrect packets received by a virtual interface.

<b>state-change</b>	Configures all traps related to state change. This keyword can also specify the following traps related to state change:	
	<b>IfStateChange</b>	Specifies state change of an interface;
	<b>NbrStateChange</b>	Specifies state change of a neighbor;
	<b>VirtIfStateChange</b>	Specifies state change of a virtual interface;
	<b>VirtNbrStateChange</b> <b>RestartStatusChange</b> <b>NbrRestartHelperStatusChange</b> <b>VirtNbrRestartHelperStatusChange</b>	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** The following example enables all traps of OSPFv3 process 100.

**Examples**

```
Ruijie(config)#ipv6 router ospf 100
Ruijie(config-router)# enable traps
```

Related Commands	Command	Description
	<b>show ipv6 ospf</b>	Displays global OSPFv3 configuration information.
	<b>enable mib-binding</b>	Binds MIB to an OSPFv3 process.
	<b>snmp-server enable traps ospf</b>	Enables OSPFv3 to send trap information.

**Platform** N/A

**Description**

### 3.17 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
<b>grace-period</b> <i>grace-period</i>	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.
<b>inconsistent-lsa-checking</b>	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** The following example enables GR for OSPFv3 instance 1 and sets the GR period to 60 seconds.

**Examples**

```
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** N/A

**Description**

### 3.18 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
<b>disable</b>	Disables the device to assist other devices in performing GR.
<b>strict-lsa-checking</b>	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.
<b>internal-lsa-checking</b>	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** or **internal-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** The following example disables the GF helper function of the OSPFv3 instance 1 and modifies the topology change detection policy.

**Examples**

```
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** N/A

**Description**

## 3.19 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
<i>process-id</i>	OSPF process ID.
<b>area</b> <i>area-id</i>	OSPFv3 area in which the interface participates. It can be an integer or an IPv4 prefix.
<b>instance</b> <i>instance-id</i>	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** The following example starts the OSPFv3 process on int fastethernet 0/0 for the specified area of the specified instance.

**Examples**

```
int fastethernet 0/0
ipv6 ospf 1 area 2 instance 2
```

#### Related Commands

Command	Description
<b>ipv6 router ospf</b>	Starts the OSPFv3 routing process.
<b>passive-interface</b>	Setsthe a passive interface.
<b>show ipv6 ospf interface</b>	Displays the OSPFv3 interface information.

**Platform** N/A

#### Description

## 3.20 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** | **sha1** ] [ **0** | **7** ] *key* ]

**no ipv6 ospf authentication**

#### Parameter Description

Parameter	Description
<b>null</b>	Indicates that authentication is not performed.
<i>spi</i>	Specifies a security parameter index, in the range from 256 to 4294967295.
<b>md5</b>	Specifies the MD5 authentication mode.
<b>sha1</b>	Specifies the SHA1 authentication mode.
<b>0</b>	Indicates that a key is displayed in the plain-text format.
<b>7</b>	Indicates that a key is displayed in the cipher-text format.
<i>key</i>	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 aaaaaaaaaaaaaaaaaaaaaaaaaaaaaa.



```
Ruijie(config-if)# ipv6 ospf authentication ipsec spi 300 md5
aaaaaaaaaaaaaaaaaaaaaaaaaaaaaa
```

#### Related Commands

Command	Description
<b>ipv6 ospf authentication</b>	Specifies interface authentication.
<b>area virtual-link authentication</b>	Specifies virtual link authentication.

#### Platform

N/A

#### Description

## 3.21 ipv6 ospf bfd

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** [ **disable** ] [ **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 <i>instance-id</i>	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 enable 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

```
Ruijie(config)# int fastethernet 0/0
```

#### Examples

```
Ruijie(config-if-fastethernet 0/0)# ipv6 ospf bfd
```

#### Related Commands

Command	Description
<b>ipv6 router ospf</b> <i>process-id</i>	Starts the OSPFv3 routing process and enter into the routing process configuration mode.

**bdf all-interfaces**

Enables the BFD on all OSPFv3 interfaces.

**Platform** N/A**Description**

## 3.22 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
<i>Cost</i>	Cost of interface, in the range from 0 to 65535.
<b>instance</b> <i>instance-id</i>	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**

The following example sets the cost of the interface to 1:

**Examples**

```
Ruijie(config)# int fastethernet 0/0
Ruijie(config-if)# ipv6 ospf cost 1
```

**Related  
Commands**

Command	Description
<b>show ipv6 ospf interface</b>	Displays the OSPFv3 interface information.
<b>ipv6 ospf area</b>	Sets the interface to participate in the OSPFv3 routing process.

**Platform** N/A

**Description**

### 3.23 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
<i>seconds</i>	Dead interval of neighbors. Its range is from 1 to 65535 in the unit of seconds.
<b>minimal hello-multiplier</b> <i>multiplier</i>	Enables the fast hello function, which takes 1s as the dead interval of neighbors. <i>Multiplier</i> specifies the number of hello packets sent in one second, in the range from 3 to 20.
<b>instance</b> <i>instance-id</i>	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** The following example sets the dead interval of neighbors to 60 seconds on an interface.

**Examples**

```
ipv6 ospf dead-interval 60
```

**Related  
Commands**

Command	Description
<b>ipv6 ospf hello-interval</b>	Sets the interval for sending the Hello message on an interface.
<b>show ipv6 ospf interface</b>	Displays the OSPFv3 interface information.
<b>ipv6 ospf area</b>	Sets the interface to participate in the OSPFv3 routing process

**Platform** N/A

**Description**

## 3.24 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
<b>null</b>	Indicates that encryption authentication is not performed.
<i>spi</i>	Specifies a security parameter index, in the range from 256 to 4294967295.
<b>null</b>	Specifies the null encryption mode.
<b>md5</b>	Specifies the MD5 authentication mode.
<b>sha1</b>	Specifies the SHA1 authentication mode.
<b>0</b>	Indicates that a key is displayed in the plain-text format.
<b>7</b>	Indicates that a key is displayed in the cipher-text format.
<i>key</i>	Specifies an authentication key.

**Defaults** Encryption authentication is not performed by default.

**Command** Interface configuration mode

**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 aaaaaaaaaaaaaaaaaaaaaaaaaaaaaa.

```
Ruijie(config-if)# ipv6 ospf encryption ipsec spi 300 esp null md5  
aaaaaaaaaaaaaaaaaaaaaaaaaaaaa
```

**Related  
Commands**

Command	Description
<b>area encryption</b>	Specifies area encryption authentication.
<b>area virtual-link encryption</b>	Specifies virtual link encryption authentication.

**Platform** N/A

**Description**

## 3.25 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
<i>seconds</i>	Interval for sending the Hello message. Its range is from 1 to 65535 in the unit of seconds.
<b>instance</b> <i>instance-id</i>	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** The following example sets the interval for the interface to send the Hello message to 20 seconds.

**Examples**

```
ipv6 ospf hello-interval 20
```

**Related  
Commands**

Command	Description
<b>ipv6 ospf dead-interval</b>	Sets the interval for the interface to consider that the neighbor fails.
<b>show ipv6 ospf interface</b>	Displays the OSPFv3 interface information.
<b>ipv6 ospf area</b>	Sets the interface to participate in the OSPFv3 routing process.

**Platform** N/A

**Description**

## 3.26 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
<b>instance <i>instance-id</i></b>	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** The following example disables the MTU check function on the ethernet 1/0.

**Examples**

```
Ruijie(config) # interface ethernet 1/0  
Ruijie(config-if) # ipv6 ospf mtu-ignore
```

**Related  
Commands**

Command	Description
<b>ipv6 router ospf</b>	Starts the OSPFv3 routing process.

<b>ipv6 mtu</b>	Sets the value of IPv6 MTU of the interface.
-----------------	--

**Platform** N/A

**Description**

### 3.27 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
<b>cost</b> <i>cost</i>	(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.
<b>poll-interval</b> <i>seconds</i>	(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.
<b>priority</b> <i>priority</i>	(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.
<b>instance</b> <i>instance-id</i>	(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** The following example shows how to configure the OSPFv3 neighbor as follows: IPv6 address:

**Examples** 2001:DB8:4::1, priority value: 1, polling interval: 150 seconds.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ipv6 ospf neighbor 2001:DB8:4::1 priority 1 poll-interval 150
```

Related Commands	Command	Description
	<b>ipv6 ospf priority</b>	Sets the priority value of an interface.
	<b>ipv6 ospf network</b>	Sets the network type of an interface.

**Platform** N/A

**Description**

### 3.28 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
	<b>broadcast</b>	Specifies the broadcast network type.
	<b>non-broadcast</b>	Specifies the non-broadcast network type.
	<b>point-to-point</b>	Specifies the point-to-point network type.
	<b>point-to-multipoint</b>	Specifies the point-to-multipoint network type.
	<b>point-to-multipoint non-broadcast</b>	Specifies the point-to-multipoint non-broadcast network type.
	<b>instance instance-id</b>	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** The following example sets the network type of the interface that participates in the OSPFv3 to



**Examples**

point-to-point.

```
ipv6 ospf network point-to-point
```

**Related  
Commands**

Command	Description
<b>ipv6 ospf priority</b>	Sets the interface priority.
<b>show ipv6 ospf interface</b>	Displays the OSPFv3 interface information.
<b>ipv6 ospf area</b>	Sets the interface to participate in the OSPFv3 routing process.

**Platform**

N/A

**Description**

## 3.29 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
<i>number-value</i>	The priority of the interface. Its range is from 0 to 255.
<b>instance</b> <i>instance-id</i>	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**

The following example disables the interface from being elected as the DR/BDR.

**Examples**

```
ipv6 ospf priority 0
```

**Related  
Commands**

Command	Description
<b>ipv6 ospf network</b>	Sets the network type of an interface.

<b>router-id</b>	Sets the ID of a router.
<b>show ipv6 ospf interface</b>	Displays the OSPFv3 interface information.
<b>instance <i>instance-id</i></b>	Configures the specific OSPFv3 instance on the interface.

**Platform** N/A

**Description**

### 3.30 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
<i>seconds</i>	Interval for retransmitting the LSA. Its range is from 1 to 65535 in the unit of seconds.
<b>instance</b> <i>instance-id</i>	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** The following example sets the interval for retransmitting the LSA to 10 seconds.

**Examples**

```
ipv6 ospf retransmit-interval 10
```

**Related  
Commands**

Command	Description
<b>show ipv6 ospf interface</b>	Displays the OSPFv3 interface information.
<b>ipv6 ospf area</b>	Sets the interface to participate in the OSPFv3 routing process.

**Platform** N/A

**Description**

### 3.31 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
<i>seconds</i>	The delay in sending LSA. Its range is from 1 to 65535 in the unit of seconds.
<b>instance</b> <i>instance-id</i>	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** The following example sets the delay on the interface in transmitting the LSA.

**Examples**

```
ipv6 ospf transmit-delay 2
```

**Related  
Commands**

Command	Description
<b>show ipv6 ospf interface</b>	Displays the OSPFv3 interface information.

**Platform  
Description** N/A

### 3.32 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
<i>process-id</i>	OSPFv3 process ID number. Without the process number configured, it indicates that process 1 is started.

<i>vrf-name</i>	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** The following example starts OSPFv3 process in the specified VRF VPN1.

**Examples** Ruijie(config)# ipv6 router ospf 1 vrf vpn\_1

**Related  
Commands**

Command	Description
<b>ipv6 ospf area</b>	Configures an interface to participate in the OSPFv3 routing process.
<b>show ipv6 ospf</b>	Displays the OSPFv3 routing process information.

**Platform** N/A

**Description**

### 3.33 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
<i>number</i>	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** 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
<b>max-concurrent-dd</b>	Sets the maximum concurrent interacting neighbors in the OSPFv3 processes

**Platform** N/A  
**Description**

## 3.34 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**  
**no log-adj-changes**

**Parameter  
Description**

Parameter	Description
<b>detail</b>	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** Routing process configuration mode  
**Mode**

**Usage Guide** N/A

**Configuration** The following example turns on the log of adjacency state change.

**Examples**

```
Ruijie(config)# router ospf 1
Ruijie(config)# log-adj-changes detail
```

**Related  
Commands**

Command	Description
<b>show ipv6 ospf</b>	Displays the OSPF global configuration information

**Platform** N/A

**Description**

### 3.35 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
<i>number</i>	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  
Commands**

Command	Description
<b>ipv6 router ospf max-concurrent-dd</b>	Sets the maximum concurrent interacting neighbors allowed in the OSPFv3 processes.

**Platform**

N/A

**Description**

### 3.36 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.
<i>interface-type</i> <i>interface-number</i>	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** The following example enables only the VLAN1 interface to participate in the OSPFv3 process.

**Examples**

```
passive-interface default
no passive-interface vlan 1
```

**Related  
Commands**

Command	Description
<b>ipv6 ospf area</b>	Configures an interface to participate in the OSPFv3 routing process.
<b>show ipv6 ospf</b>	Displays the OSPFv3 routing process information.
<b>show ipv6 ospf neighbor</b>	Displays the OSPFv3 neighbor information.

**Platform** N/A

**Description**

## 3.37 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** } | **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** } | **metric** | **metric-type** } | **route-map** *route-map-name* | **tag** *tag-value* ]

**Parameter  
Description**

Parameter	Description
-----------	-------------

<b>bgp</b>	The bgp protocol is redistributed.
<b>connected</b>	The directly connected route is redistributed.
<b>isis</b> <i>[ area-tag ]</i>	The isis is redistributed. The area-tag specifies a particular isis instance.
<b>ospf</b> <i>process-id</i>	The ospf is redistributed. The process-id specifies a particular ospf instance within the range of 1-65535.
<b>rip</b>	The rip is redistributed.
<b>static</b>	The static route is redistributed.
<b>level-1</b>   <b>level-1-2</b>   <b>level-2</b>	It is used in the IS-IS route redistribution only and redistributes the routes at a specified level. .
<b>metric</b> <i>metric-value</i>	Specifies the metric for the OSPFv3 external 2 LSA with metric-value. Its range is 0 to 16777214.
<b>metric-type</b> { 1/2 }	Set the metric type for the external route to E-1 or E-2.
<b>route-map</b> <i>map-map-name</i>	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.
<b>tag</b> <i>tag-value</i>	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 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** The following example redistributes the direct route and associates route-map test :

#### Examples

```
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
<b>default-information originate</b>	Sets the default route to be redistributed.
<b>default-metric</b>	Sets the default metric for the route to be redistributed.
<b>summary-prefix</b>	Sets the converged address range of the external route.
<b>show ipv6 ospf</b>	Displays the OSPFv3 routing process information.
<b>show ipv6 ospf database</b>	Displays the OSPFv3 link state database information.

**Platform** N/A

**Description**

## 3.38 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
<i>router-id</i>	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
<b>ipv6 ospf priority</b>	Sets the interface priority.
<b>show ipv6 ospf</b>	Displays the OSPFv3 routing process information.

**Platform** N/A

**Description**

## 3.39 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
<i>ipv6-prefix/prefix-length</i>	Address range of the converged route
<b>not-advertise</b>	Does not advertise the converged route to neighbors. Absence of this parameter means to advertise.
<b>tag</b> <i>number</i>	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.

Configuring the **summary-prefix** command on the ASBR can perform convergence for only redistributed routes; while configuring this command on the NSSA ABR translator can perform convergence for the redistributed routes and the Type-5 routes translated from Type-7.

**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
<b>area-range</b>	Configures route convergence between the OSPFv3 areas.
<b>redistribute</b>	Redistributes the routes in other routing process.

**Platform** N/A

**Description**

### 3.40 show ipv6 ospf

Use this command to display the information of the OSPFv3 process.

**show ipv6 ospf** [ *process-id* ]

**Parameter Description**

Parameter	Description
<i>process-id</i>	OSPF process ID number.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the information about the OSPFv3 process.

**Examples**

```
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 msec
Minimum hold time for LSA throttle 5000 msec
Maximum wait time for LSA throttle 5000 msec
Lsa Transmit Pacing timer 40 msec, 1 LS-Upd
LSA interval 5 secs, Minimum LSA arrival 1000 msec
Pacing lsa-group: 30 secs
Number of incoming 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 Adjacency 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
```

**Related  
Commands**

Command	Description
<b>ipv6 router ospf</b>	Starts the OSPFv3 routing process.
<b>default-information originate</b>	Sets the default route to be redistributed.
<b>default-metric</b>	Sets the default metric for the route to be redistributed.
<i>router-id</i>	Sets the OSPFv3 routing process ID
<b>timers spf</b>	Sets the delay and the minimum and maximum intervals for the OSPFv3 to perform SPF calculation after receiving the topology change information.

**Platform** N/A

**Description**

### 3.41 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
	<i>process-id</i>	OSPF process ID number
	<i>lsa-type</i>	The LSA types are as follows: 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.
	<i>adv-router router-id</i>	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
<b>ipv6 router ospf</b>	Starts the OSPFv3 routing process.

**Platform** N/A

**Description**

## 3.42 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
<i>interface-type</i> <i>interface-number</i>	Specifies the interface type and interface number.
<i>process-id</i>	OSPFv3 process ID
<b>brief</b>	Displays the interface summary.

**Defaults** N/A

**Command Mode** Privileged EXEC mode.

**Usage Guide** N/A

**Configuration** The following example displays the information about the OSPFv3 interface.

**Examples**

```
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
<b>ipv6 router ospf</b>	Starts the OSPFv3 routing process.
<b>ipv6 ospf area</b>	Enables the interface to participate in the OSPFv3 process.

**Platform** N/A

**Description**

### 3.43 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
-----------	-------------

<i>process-id</i>	OSPFv3 process ID number
<b>detail</b>	Displays details about the neighbor.
<i>interface-type</i> <i>interface-number</i>	Interface type and interface number
<i>neighbor-id</i>	Neighbor's router ID

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following command displays the brief information about the OSPFv3 neighbor.

**Examples**

```
Ruijie# show ipv6 ospf neighbor
OSPFv3 Process (1) , 1 Neighbors, 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
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
<b>ipv6 router ospf</b>	Starts the OSPFv3 routing process.
<b>ipv6 ospf area</b>	Enables the interface to participate in the OSPFv3 process.
<b>area virtual-link</b>	Configures the OSPFv3 virtual link.
<b>show ipv6 ospf interface</b>	Displays the OSPFv3 interface information.

**Platform** N/A

**Description**

## 3.44 show ipv6 ospf restart

Use this command to display the OSPFv3 graceful restart configuration.



**show ipv6 ospf [ *process- id* ] restart**

Parameter Description	Parameter	Description
	<i>process- id</i>	OSPFv3 process ID number.

**Defaults** N/A

**Command  
Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the restarter status.

**Examples**

```
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
	<b>ipv6 router ospf</b>	Starts the OSPFv3 routing process.

**Platform  
Description** N/A

### 3.45 show ipv6 ospf route

Use this command to display the OSPFv3 route information.

**show ipv6 ospf [ *process- id* ] route [ *count* ]**

Parameter	Parameter	Description
-----------	-----------	-------------

Description		
	<i>process- id</i>	OSPFv3 process ID number.
	<b>count</b>	Total number of OSPFv3 routes

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the information about OSPFv3 routes.

**Examples**

```
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 2
Destination
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
	<b>ipv6 router ospf</b>	Starts the OSPFv3 routing process.

**Platform** N/A

**Description**

## 3.46 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
	<i>process- id</i>	OSPFv3 process ID number

**Defaults** N/A

**Command Mode** Privileged EXEC mode.

**Usage Guide** N/A

**Configuration** The following example displays the external route convergence information of OSPFv3.

**Examples**

```
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
<b>ipv6 router ospf</b>	Starts the OSPFv3 routing process.
<b>summary-prefix</b>	Configures the converge route outside the OSPFv3 routing domain.

**Platform** N/A

**Description**

## 3.47 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
<i>process-id</i>	OSPFv3 process ID number
<i>area-id</i>	Area ID

**Defaults** N/A

**Command  
Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following command displays the topology information about each area of OSPFv3.

**Examples**

```
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  --
```

**Related  
Commands**

Command	Description
<b>ipv6 router ospf</b>	Starts the OSPFv3 routing process.
<b>area range</b>	Configures the address range of the OSPF area.

**Platform** N/A

**Description**

## 3.48 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
<i>process- id</i>	OSPFv3 process ID number

**Defaults** N/A

**Command  
Mode** Privileged EXEC mode.

**Usage Guide** N/A

**Configuration** The following command displays the information about the OSPFv3 virtual link.

**Examples**

```
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
<b>ipv6 router ospf</b>	Starts the OSPFv3 routing process.
<b>area virtual-link</b>	Configures the OSPFv3 virtual link.

**show ipv6 ospf neighbor**

Displays the OSPFv3 neighbor information.

**Platform** N/A**Description**

### 3.49 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
<i>arrival-time</i>	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** The following example sets the delay for receiving repeated LSAs to 2 seconds.**Examples**

```
Ruijie(config)# ipv6 router ospf 1
Ruijie(config-router)# timers lsa arrival 2000
```

**Related  
Commands**

Command	Description
<b>show ipv6 ospf</b>	Displays OSPFv3 process information, including identifiers of routing devices.

**Platform** N/A**Description**

### 3.50 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
	<b>show ipv6 ospf</b>	Displays OSPFv3 configuration information.

**Platform** N/A

**Description**

### 3.51 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
	<i>transmit-time</i>	Specifies the interval for sending LSA groups. The range is from 10 to 1000 in the unit of milliseconds.
	<i>transmit-count</i>	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 Mode** Routing process configuration mode

**Usage Guide** There are usually a lot of LSAs on a network; therefore, the load of the device is very high. Setting proper **transmit-time** and **transmit-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 **transmit-time** value and increase the **transmit-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
	<b>show ipv6 ospf</b>	Displays OSPFv3 process information.

**Platform** N/A

**Description**

## 3.52 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
	<i>spf-delay</i>	Defines the waiting time for the SPF calculation, which ranges from 0 to 214748364 seconds. After receiving the topology change information, the OSPF routing process has to waiting for a given period before making the SPF calculation.
	<i>spf-holdtime</i>	Defines the interval between two SPF calculations, which ranges

	from 0 to 214748364 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 Mode**

Routing process configuration 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
<b>clear ipv6 ospf</b>	Restarts part of the function of the OSPFv3.
<b>show ipv6 ospf</b>	Displays the OSPFv3 routing process information.
<b>timers throttle spf</b>	Configures the exponential backoff delay of the SPF calculation

**Platform**

N/A

**Description**

## 3.53 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
<i>delay-time</i>	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.
<i>hold-time</i>	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
<i>max-wait-time</i>	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
<b>show ipv6 ospf</b>	Displays OSPFv3 process information.

**Platform Description** N/A

### 3.54 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
<b>inter-area</b>	Calculates the inter area routes.
<i>ia-delay</i>	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.
<b>ase</b>	Calculates the external routes.
<i>ase-delay</i>	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** The following example sets the delay time of the inter-area route calculation to one second.

**Examples**

```
Ruijie(config)# ipv6 router ospf 1
Ruijie(config-router)# timers throttle route inter-area 1000
```

## Related Commands

Command	Description
N/A	N/A

**Platform** N/A

## Description

### 3.55 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
<i>spf-delay</i>	Specifies an SPF calculation delay after the topology change information is received. The range is from 1 to 600000 in the unit of milliseconds.
<i>spf-holdtime</i>	Specifies a shortest interval between two SPF calculations.

	The range is from 1 to 600000 in the unit of milliseconds.
<i>spf-max-waittime</i>	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-waittime* 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
<b>clear ipv6 ospf</b>	Restarts part of the OSPFv3 function.
<b>show ipv6 ospf</b>	Displays the routing process information of the OSPFv3
<b>timers spf</b>	Configures the SPF calculation delay .

**Platform** N/A

**Description**

### 3.56 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** The following example disables two-way OSPFv3 maintenance.

**Examples**

```
Ruijie(config)# ipv6 router ospf 1
Ruijie(config-router)# no two-way-maintain
```

**Related**  
**Commands**

Command	Description
<b>show ipv6 ospf</b>	Displays global OSPFv3 configuration information.

**Platform** N/A

**Description**

## 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
<i>unicast</i>	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** Ruijie(config) # **router isis**

**Examples** 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** N/A

**Description**

## 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** [ 0 | 7 ] *password-string* [ **send-only** ]

**no area-password** [ **send-only** ]

**Parameter Description**

Parameter	Description
<b>0</b>	Indicates that the key is displayed in plaintext.
<b>7</b>	Indicates that the key is displayed in ciphertext.
<i>password-string</i>	Indicates the password string for plaintext authentication. The string can contain up to 126 characters.
<b>send-only</b>	Indicates that the plaintext authentication password is only used to authenticate sent Hello packets in Level-1 areas. Received Hello packets are not authenticate.

**Defaults** By default, no authentication password is set.

**Command Mode** IS-IS routing process configuration mode

**Usage Guide** Run this command to enable authentication of received LSPs, CSNPs, and PSNPs in Level-1 areas

and include authentication information in these packets before they are sent. All IS-IS devices in an area must be configured with the same password.

This command does not take effect if the **authentication mode** command is executed. You need to first delete the previous command configuration.

To delete the password, run the **no area-password** command. If you run the **no area-password send-only** command, only the **send-only** setting is canceled. If you run the **area-password psw send-only** and **no area-password send-only** commands in sequence, the configuration is changed to **area-password psw**.

**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
<b>domain-password</b>	Sets the Level-2 domain password.
<b>authentication mode</b>	Specifies the IS-IS authentication mode.

**Platform** N/A  
**Description**

## 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** | **level-2** ]

#### Parameter Description

Parameter	Description
<i>name-of-chain</i>	Key-chain name with the maximum length being 255.
<b>level-1</b>	Specifies the authentication key-chain of the Level-1.
<b>level-2</b>	Specifies the authentication key-chain of the Level-2.

**Defaults** By default, the authentication key-chain is not specified.

**Command Mode** IS-IS routing process 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 **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** The following example specifies the authentication in the IS-IS area using the key-chain named *kc*:

#### Examples

```
Ruijie(config)# router isis
Ruijie(config-router)# authentication key-chain kc level-1
```

#### Related Commands

Command	Description
<b>authentication mode</b>	Specifies the IS-IS authentication mode.
<b>authentication send-only</b>	Specifies the IS-IS authentication applicable to the sent packets only, but not to packets received.
<b>key-chain</b>	Configures the key-chain.

**Platform** N/A

**Description**

## 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
<b>md5</b>	Specifies the MD5 authentication mode to use.
<b>text</b>	Specifies the plain-text authentication mode to use.
<b>level-1</b>	Specifies the authentication mode taking effect on the Level-1.
<b>level-2</b>	Specifies the authentication mode taking effect on the Level-2.

**Defaults** By default, the authentication mode is not specified.



**Command** IS-IS routing process configuration mode

**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** The following example specifies authentication in the IS-IS area to be the MD5 authentication mode.

**Examples**

```
Ruijie(config)# router isis  
Ruijie(config-router)# authentication mode md5 level-1
```

**Related  
Commands**

Command	Description
<b>area-password</b>	Sets the area plaintext authentication password.
<b>authentication key-chain</b>	Specifies the key-chain used by the IS-IS authentication.
<b>authentication send-only</b>	Specifies the IS-IS authentication applicable to the packets sent only, but not to the packets received.
<b>domain-password</b>	Sets the domain plaintext authentication password.

**Platform** N/A

**Description**

## 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
<b>level-1</b>	Specifies setting <b>send-only</b> on the Level-1.
<b>level-2</b>	Specifies setting <b>send-only</b> 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 received.
- Command Mode** IS-IS routing process configuration 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** The following example specifies the authentication in the IS-IS area to be the **send-only** mode.

**Examples**

```
Ruijie(config)# router isis  
Ruijie(config-router)# authentication send-only level-1
```

**Related Commands**

Command	Description
<b>authentication key-chain</b>	Specifies the IS-IS authentication key-chain.
<b>authentication mode</b>	Specifies the mode of IS-IS authentication.
<b>key-chain</b>	Configures the key-chain.

**Platform** N/A

**Description**

## 4.7 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**

Parameter	Description
-----------	-------------

Description	
	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** The following example configures all interfaces running the IS-IS protocol to conduct BFD.

**Examples**

```
Ruijie(config)# router isis 123
Ruijie(config-router)# bfd all-interface
```

## 4.8 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** The following example clears all IS-IS neighbor relation tables.

**Examples**

```
Ruijie# clear clns neighbors
```

Related Commands	Command	Description
	<b>clear isis</b>	Clears all IS-IS data structure.

**Platform  
Description** N/A

## 4.9 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 <b>area-password</b> and <b>domain-password</b> commands, the previous LSPs still exist in this router, you can use this command to clear these LSPs.	
Configuration Examples	Ruijie# <b>clear isis *</b>	
Related Commands	Command	Description
	<b>clear clns neighbors</b>	Clears all IS-IS neighbors.
Platform Description	N/A	

## 4.10 clear isis counter

Use this command to clear various statistics of IS-IS.

**clear isis [ tag ] counter**

Parameter Description	Parameter	Description
	<i>tag</i>	IS-IS instance
Defaults	N/A	
Command Mode	Privileged EXEC mode	
Usage Guide	N/A	
Configuration Examples	The following example clears various statistics of IS-IS. Ruijie# <b>clear isis counter</b>	
Related Commands	Command	Description

<b>clear isis *</b>	Clears the data structure of all IS-ISs.
---------------------	--

**Platform** N/A

**Description**

## 4.11 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
	<i>map-name</i>	(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** The following example generates a default routing information and advertises it by LSP

```
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** N/A

**Description**

## 4.12 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
<i>my-cost</i>	Distance value in the range of 1 to 255.

**Defaults**

By default, the distance is 115.

**Command  
Mode**

IS-IS routing process configuration mode or IS-IS address-family ipv6 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**

The following example sets the management distance of the IS-IS routes.

**Examples**

```
Ruijie(config)# router isis  
Ruijie(config-router)# distance 100
```

**Related  
Commands**

Command	Description
<b>isis metric</b>	Sets the metric value of the interface.

**Platform**

N/A

**Description**

## 4.13 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** [ 0 | 7 ] *password-string* [ **send-only** ]

**no domain-password** [ **send-only** ]

**Parameter  
Description**

Parameter	Description
<b>0</b>	Indicates that the key is displayed in plaintext.
<b>7</b>	Indicates that the key is displayed in ciphertext.
<i>password-string</i>	Indicates the password string for plaintext authentication. The string can contain up to 126 characters.
<b>send-only</b>	Indicates that the plaintext authentication password is only used to authenticate sent Hello packets in Level-1 areas. Received Hello packets are not authenticated.

**Defaults**

By default, no authentication password is set.

**Command** IS-IS routing process configuration mode  
**Mode**

**Usage Guide** Run this command to enable authentication of received LSPs, CSNPs, and PSNPs in Level-2 domains and include authentication information in these packets before they are sent. All IS-IS devices in a Level-2 domain must be configured with the same password.

This command does not take effect if the **authentication mode** command is executed. You need to first delete the previous command configuration.

To delete the password, run the **no domain-password** command. If you run the **no domain-password send-only** command, only the **send-only** setting is canceled. If you run the **domain-password psw send-only** and **no domain-password send-only** commands in sequence, the configuration is changed to **domain-password psw**.

**Configuration Examples**

```
Ruijie(config)# router isis  
Ruijie(config-router)# domain-password redgiant
```

**Related Commands**

Command	Description
<b>area-password</b>	Sets the plain-text authentication password of Level-1 area.
<b>authentication mode</b>	Specifies the IS-IS authentication mode.

**Platform** N/A  
**Description**

## 4.14 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** IS-IS routing process configuration mode  
**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** The following example binds the MIB with an IS-IS process.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# router isis
Ruijie(config-router)# enable mib-binding
```

**Related  
Commands**

Command	Description
<b>graceful-restart helper disable</b>	Disables the IS-IS GR Help capability.
<b>isis hello-interval</b>	Sets the interval of sending Hello packets.
<b>isis hello-multiplier</b>	Sets the Hello holdtime multiplier for the IS-IS interface.

**Platform** N/A

**Description**

## 4.15 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
<b>all</b>	Indicates all types of IS-IS trap packets.
<b><i>traps set</i></b>	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
<b>graceful-restart helper disable</b>	Disables the IS-IS GR Help capability.
<b>isis hello-interval</b>	Sets the interval of sending Hello packets.
<b>isis hello-multiplier</b>	Sets the Hello holdtime multiplier for the IS-IS interface.

**Platform** N/A**Description**

## 4.16 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  
Mode** IS-IS address-family IPv6 configuration mode**Usage Guide** N/A**Configuration** The following example exits IS-IS address family IPv6 configuration mode.**Examples**

```
Ruijie (config-router-af)#exit-address-family
Ruijie (config-router)#
```

**Related  
Commands**

Command	Description
<b>graceful-restart helper disable</b>	Disables the IS-IS GR Help capability.
<b>isis hello-interval</b>	Sets the interval of sending Hello packets.
<b>isis hello-multiplier</b>	Sets the Hello holdtime multiplier for the IS-IS interface.

**Platform** N/A**Description**

## 4.17 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

Use this command to enable the IS-IS GR Restart capability. As long as the network conditions remain unchanged, IS-IS can be restarted and restored to the pre-restart state without impact on data forwarding.



### Configuration

The following example enables the IS-IS GR Restart capability.

### Examples

```
Ruijie(config)# router isis  
Ruijie(config-router)# graceful-restart
```

### Related Commands

Command	Description
<b>graceful-restart helper disable</b>	Disables the IS-IS GR Help capability.
<b>isis hello-interval</b>	Sets the interval of sending Hello packets.
<b>isis hello-multiplier</b>	Sets the Hello holdtime multiplier for the IS-IS interface.

### Platform

The IS-IS GR Restart function is only supported by device which supports hot backup.


### Description

## 4.18 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**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<i>seconds</i>	Time interval allowed for the device graceful-restart, in the range of 1 to 65,535 seconds.
<b>Defaults</b>	The default value is 300 seconds.	
<b>Command Mode</b>	IS-IS routing process configuration mode	
<b>Usage Guide</b>	 N/A	
<b>Configuration Examples</b>	The following example sets the interval of the grace-restart to 40 seconds. <pre>Ruijie(config)# <b>router isis</b> Ruijie(config-router)# graceful-restart grace-period 40</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>graceful-restart</b>	Enables the IS-IS GR Restart capability.
	<b>show isis graceful-restart</b>	Displays the status information of the IS-IS GR Restart.
<b>Platform Description</b>	The IS-IS GR Restart function is only supported by device which supports hot backup.	

## 4.19 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**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	N/A	N/A
<b>Defaults</b>	IS-IS GR Helper capacity is enabled by default.	
<b>Command Mode</b>	IS-IS routing process configuration mode	
<b>Usage Guide</b>	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** The following example disables the IS-IS GR Helper capability.

**Examples**

```
Ruijie(config)# router isis  
Ruijie(config-router)# graceful-restart helper disable
```

Related Commands	Command	Description
	<b>graceful-restart</b>	Enables the IS-IS GR Restart capability.

**Platform** N/A

**Description**

## 4.20 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 Description	Parameter	Description
	<b>multi-point</b>	Pads Hello packets of the LAN type.
	<b>point-to-point</b>	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** The following example configures to cancel the padding of Hello packets of the P2P type.

**Examples**

```
Ruijie(config)# router isis  
Ruijie(config-router)# no hello padding point-to-point
```

## 4.21 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

```
Ruijie(config)# router isis
```

### Examples

```
Ruijie(config-router)# hostname dynamic
```

### Related Commands

Command	Description
N/A	N/A

### Platform

N/A

### Description

## 4.22 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** IS-IS routing process configuration mode

**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 execute 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** Ruijie(config) # **router isis**

**Examples** Ruijie(config-router) # **ignore-lsp-errors**

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 4.23 ip router isis

Use this command to enable the IPv4 IS-IS on the specified interface. 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
<i>tag</i>	IS-IS instance name.

**Defaults** By default, the Ipv4 IS-IS is disabled on the interface.

**Command** Interface configuration mode

**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** Ruijie(config) # **interface GigabitEthernet** 0/1

**Examples** Ruijie(config-if) # **ip router isis**

Related Commands	Command	Description
	<b>ipv6 router isis</b>	Enables the IPv6 IS-IS on the interface.
	<b>router isis</b>	Creates IS-IS instances.

Platform N/A

Description

## 4.24 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 routing 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
	<b>ip router isis</b>	Enables the IPv4 IS-IS on the interface.
	<b>router isis</b>	Creates IS-IS instances.

Platform N/A

Description



## 4.25 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
<i>name-of-chain</i>	Key-chain name with the maximum length being 255.
<b>level-1</b>	Specifies the authentication key-chain of the Level-1.
<b>level-2</b>	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
<b>isis authentication mode</b>	Specifies the mode of IS-IS interface

	authentication.
<b>isis authentication send-only</b>	Specifies the IS-IS interface authentication only applicable to the packets sent, but not to the packets received.
<b>key-chain</b>	Configures the key-chain.

**Platform** N/A

**Description**

## 4.26 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
<b>md5</b>	Specifies the MD5 authentication mode.
<b>text</b>	Specifies the plain-text authentication mode.
<b>level-1</b>	Specifies the interface authentication mode to take effect on the Level-1.
<b>level-2</b>	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
	<b>isis authentication key-chain</b>	Specifies the key-chain used by the IS-IS interface authentication.
	<b>isis authentication send-only</b>	Specifies the IS-IS interface authentication to only apply on the packets sent, but not on the packets received.
	<b>key-chain</b>	Configures the key-chain.
	<b>isis password</b>	Sets the plain-text authentication password for the packets transmit on the IS-IS interface.

Platform N/A

Description

## 4.27 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
	<b>level-1</b>	Set the <b>send-only</b> on the Level-1 of the interface.
	<b>level-2</b>	Set the <b>send-only</b> 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
<b>isis authentication key-chain</b>	Specifies the key-chain used by the IS-IS interface authentication.
<b>isis authentication mode</b>	Specifies the mode of the IS-IS interface authentication.
<b>key-chain</b>	Configures the key-chain.

**Platform** N/A

**Description**

## 4.28 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
<b>Disable</b>	Disables association between IS-IS and BFD on an interface.
<b>anti-congestion</b>	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**

1. The following example disables association between IS-IS and BFD on GigabitEthernet 0/1.

**Examples**

```
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
```

## 4.29 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
<b>level-1</b>	Forms the Level-1 adjacency.
<b>level-2-only</b>	Forms the Level-2 adjacency.
<b>level-1-2</b>	Forms the Level-1-2 adjacency.
<b>external</b>	Uses the interface as an external domain interface.

**Defaults** By default, the circuit-type is Level-1-2.

**Command Mode** Interface configuration mode

**Usage Guide** If the circuit type is set to Level-1 or Level-2-only, IS-IS will only send PDUs of the corresponding Level.

If the system type is set to Level-1 or Level-2-only, IS-IS only processes the instances of the corresponding Level, and the interface only sends the PDUs of the same Level specified by the **is-type** and **circuit-type** commands.

If the interface is set to **external**, the interface will work as an external domain interface and IS-IS will not send PDUs of the corresponding Level.

**Configuration Examples**

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if)# isis circuit-type level-2-only
```

### Related Commands

Command	Description
<b>isis-type</b>	Sets the Level of IS-IS instance.

**Platform** N/A

**Description**

## 4.30 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
<i>interval</i>	Interval for sending the CSNP packets in the range of 0 to 65535, with the unit being second.
<b>level-1</b>	Interval for sending the CSNP packets configured only on the Level-1.
<b>level-2</b>	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

## 4.31 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** { *interval* | **minimal** } [ **level-1** | **level-2** ]

### Parameter Description

Parameter	Description
<i>interval</i>	Interval for sending the Hello packet, in the range of 1 to 65536.
<b>minimal</b>	The holdtime is set to the minimal value 1.
<b>level-1</b>	This interval applies on the Level-1.
<b>level-2</b>	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

The following example sets the interval for sending Hello packets on the interface.

### Examples

```
Ruijie(config)# interface GigabitEthernet 0/1
```

```
Ruijie(config-if)# isis hello-interval 5 level-1
```

The following example sets the Holdtime for sending Hello packets on the interface to the minimum value 1.

```
Ruijie(config)# interface GigabitEthernet 0/1
```



```
Ruijie(config-if)# isis hello-interval minimal
```

**Related  
Commands**

Command	Description
<b>isis hello-multiplier</b>	Sets the multiplier of the Hello hold timer.

**Platform** N/A  
**Description**

## 4.32 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
<i>multiplier-number</i>	Multiplier value in the range of 2 to 100.

**Defaults** By default, the multiplier is 3..

**Command  
Mode** Interface 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** Ruijie(config) # **router isis**

**Examples** Ruijie(config-router) # **isis hello-multiplier 5**

**Related  
Commands**

Command	Description
<b>isis hello-interval</b>	Sets the interval for sending the Hello packets.

**Platform** N/A  
**Description**

## 4.33 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.  
Hello packets can be padded to notify a neighbor of the MTU supported by the local device.  
In IS-IS routing process configuration mode, the corresponding **hello padding** command also exists.  
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 local interface is cancelled in interface configuration mode.

**Configuration** The following example fills no IS-IS Hello packets.

**Examples**

```
Ruijie(config)# interface GigabitEthernet 0/1  
Ruijie(config-if)# no isis hello padding
```

**Related  
Commands**

Command	Description
<b>isis hello-interval</b>	Sets the interval for sending the Hello packets.

**Platform  
Description** N/A

## 4.34 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** *milliseconds* [ **level-1** | **level-2** ]

**no isis lsp-interval** [ **level-1** | **level-2** ]

**Parameter  
Description**

Parameter	Description
<i>milliseconds</i>	Indicates the LSP interval. The value range is 1 to 4,294,967,295, in the unit of milliseconds.
<b>level-1</b>	Applies the setting only to Level-1 LSPs.
<b>level-2</b>	Applies the setting only to Level-2 LSPs.

**Defaults** By default, the lsp-interval is 33ms.

**Command** Interface configuration mode  
**Mode**

**Usage Guide** N/A

**Configuration** The following example sets the interval for the LSP PDU transmission to 100.

**Examples**

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if)# isis lsp-interval 100
```

**Related  
Commands**

Command	Description
<b>isis retransmit-interval</b>	Sets the LSP retransmission interval in the P2P network.

**Platform** N/A  
**Description**

## 4.35 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
<b>blocked</b>	Blocks all LSP forwarding on the interface.
<i>mesh-group-id</i>	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** Interface configuration mode  
**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 subinterfaces, 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** Ruijie#**configure terminal**

**Examples** Ruijie(config)# **interface GigabitEthernet 0/1**  
Ruijie(config-if)#**isis mesh-group 1**

**Related  
Commands**

Command	Description
<b>isis network point-to-point</b>	Sets the Broadcast interface type of IS-IS to Point-to-Point.

**Platform** N/A

**Description**

## 4.36 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
<i>metric</i>	Metric value in the range of 1 to 63.
<b>level-1</b>	Sets this metric to apply on the Level-1 circuit.
<b>level-2</b>	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** Ruijie(config)# **interface GigabitEthernet 0/1**  
**Examples** Ruijie(config-if)#**isis metric 1**

**Related**

Command	Description
---------	-------------

Commands		
	metic-style	Sets the metric type.
	isis wide-metric	Sets the wide metric of the IS-IS interface.

Platform N/A

Description

## 4.37 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
	point-to-point	Point-to-Point type interface.

Defaults By default, it is Broadcast type.

Command Interface configuration mode  
Mode

Usage Guide N/A

Configuration Ruijie(config)# interface GigabitEthernet 0/1

Examples 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 N/A

Description

## 4.38 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
	<b>0</b>	Indicates that the key is displayed in plaintext.
	<b>7</b>	Indicates that the key is displayed in ciphertext.
	password-string	Indicates the password string for plaintext authentication. The string can contain up to 126 characters.
	<b>send-only</b>	Indicates that the plaintext authentication password is only used to authenticate sent packets. Received packets are not authenticated.
	<b>level-1</b>	Applies the setting to the Level-1 circuit type.
	<b>level-2</b>	Applies the setting to the Level-2 circuit type.

**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** Ruijie(config) # **interface GigabitEthernet** 0/1

**Examples** Ruijie(config-if) # **isis password** redgiant

Related Commands	Command	Description
	isis authentication mode	Specifies the mode of the IS-IS interface authentication.

**Platform** N/A

**Description**

## 4.39 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	Parameter	Description
-----------	-----------	-------------

<b>Description</b>		
	<i>value</i>	Value of the priority in the range of 0 to 127.
	<b>level-1</b>	Applies to the Level-1 circuit.
	<b>level-2</b>	Applies to the Level-2 circuit.

**Defaults** The default priority value is 64 and it is applied on both Level-1 and Level-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
```

<b>Related Commands</b>	Command	Description
	N/A	N/A

**Platform Description** N/A

## 4.40 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** ]

<b>Parameter Description</b>	Parameter	Description
	seconds	Indicates that the value range is <b>1</b> to <b>120</b> in seconds.
	<b>level-1</b>	Indicates that the configuration takes effect only at Level-1.
	<b>level-2</b>	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
```

## 4.41 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 retansmit-interval** *seconds* [ **level-1** | **level-2** ]

**no isis retansmit-interval** [ **level-1** | **level-2** ]

Parameter Description	Parameter	Description
	<i>seconds</i>	Indicates the LSP retransmission interval. The value range is 0 to 65,535, in the unit of seconds.
	<b>level-1</b>	Applies the setting only to Level-1 LSPs.
	<b>level-2</b>	Applies the setting only to Level-2 LSPs.

**Defaults** The default value is 5s.

**Command Mode** Interface configuration mode

**Usage Guide** Use this command to configure the LSP retransmission interval. In a P2P network, after a device sends an LSP, if the device receives no PSNP response within the time specified by this command, it will resend the LSP. If the retransmission interval is set to 0, the LSP will not be resent.

The following example sets the LSP retransmission interval to 10s.

**Configuration** Ruijie(config)# interface serial 0/1



**Examples** Ruijie(config-if)# isis retransmit-interval 10 level-2

**Related  
Commands**

Command	Description
<b>isis lsp-interval</b>	Configures the interval for LSP advertisement on the interface.

**Platform** N/A

**Description**

## 4.42 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 neighbor 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** The following example disables three-way handshake on interface GigabitEthernet 0/0.

**Examples** 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
<b>metric-type</b>	Sets the metric type.
<b>isis metric</b>	Sets the metric value of the interface.

**Platform** N/A

**Description**

## 4.43 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
<i>metric</i>	Metric value in the range of 1 to 16,777,241.
<b>level-1</b>	Sets this Metric to apply on the Level-1 circuit.
<b>level-2</b>	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(config)# **interface GigabitEthernet** 0/1

Ruijie(config-if)#**isis wide-metric** 1000

### Related Commands

Command	Description
<b>metric-type</b>	Sets the metric type.
<b>isis metric</b>	Sets the metric value of the interface.

**Platform Description** N/A

## 4.44 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
-----------	-------------

<b>level-1</b>	Specifies the IS-IS process running on the Level-1 only.
<b>level-1-2</b>	Specifies the IS-IS process running on both Level-1 and Level-2.
<b>level-2-only</b>	Specifies the IS-IS process running on the Level-2 only.

**Defaults** By default, the IS-IS process runs on Level-1-2.

**Command** IS-IS routing process configuration mode  
**Mode**

**Usage Guide** Changing the is-type enables or disables the route of one Level.

**Configuration** Ruijie(config) # **router isis**

**Examples** Ruijie(config-router) # **is-type level-1**

Related Commands	Command	Description
	<b>isis circuit-type</b>	Sets the type of Interface circuit.

**Platform** N/A

**Description**

## 4.45 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** IS-IS routing process configuration mode  
**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** Ruijie(config) # **router isis**

**Examples** Ruijie(config-router) # **log-adjacency-changes**

Related Commands	Command	Description
	N/A	N/A

Platform N/A  
Description

## 4.46 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
	<b>level-1</b>	Enables the LSP fragment extension mode for the Level-1 only.
	<b>level-2</b>	Enables the LSP fragment extension mode for the Level-2 only.
	<b>compatible</b>	Compatible with RFC3786
	<b>rfc3786</b>	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** N/A

**Description**

## 4.47 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** ] *value*

**no lsp-gen-interval** [ **level-1** | **level-2** ]

**Parameter**  
**Description**

Parameter	Description
<b>level-1</b>	Applies the configuration only to Level-1.
<b>level-2</b>	Applies the configuration only to Level-2.

**Defaults** By default, this command is not configured and the interval of the minimal generation is 5s, it is effective on both Level-1 and Level-2

**Command** IS-IS routing process configuration mode  
**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.

### Configuration

**Examples** 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
<b>lsp-refresh-interval</b>	Configures the interval for LSP refresh.

**Platform** N/A

**Description**

## 4.48 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
<i>size</i>	Specifies the maximum length for transmitting LSP packets. The value range is <b>512</b> to <b>16000</b> in bytes.
<b>level-1</b>	Indicates that the configuration takes effect only at Level-1.
<b>level-2</b>	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
```

## 4.49 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
<i>size</i>	Specifies the maximum length of LSP packets. The value range is <b>1,492</b> to <b>16,000</b> in bytes according to the RFC.

<b>Defaults</b>	The default value is <b>1492</b> .
<b>Command Mode</b>	IS-IS routing process configuration mode
<b>Default Level</b>	14
<b>Usage Guide</b>	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.
<b>Configuration Examples</b>	The following example configures the maximum length for receiving LSP packets to 1498 bytes.
	<pre>Ruijie(config)# router isis Ruijie(config-router)# lsp-length receive 1498</pre>

## 4.50 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
	<i>interval</i>	LSP refresh interval in the range of 1 to 65535 with unit being second.

<b>Defaults</b>	By default, the lsp-refresh-interval is 900 seconds.		
<b>Command Mode</b>	IS-IS routing process configuration mode		
<b>Usage Guide</b>	<p>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.</p> <p>It should be noted that the lsp-refresh-interval must be less than the max lifetime.</p>		
<b>Configuration Examples</b>	<pre>Ruijie(config)# router isis Ruijie(config-router)# lsp-refresh-interval 600</pre>		
<b>Related Commands</b>	<table> <tr> <th>Command</th><th>Description</th></tr> </table>	Command	Description
Command	Description		

N/A

N/A

**Platform** N/A**Description**

## 4.51 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
<i>value</i>	The maximal number of area address allowed, in the range of 3 to 6.

**Defaults** By default, the max-area-addresses is 3.**Command** IS-IS routing process configuration mode  
**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** Ruijie(config)# **router isis****Examples** Ruijie(config-router)# **max-area-addresses** 5**Related**  
**Commands**

Command	Description
<b>net</b>	Sets the IS-IS NET(Network Entry Title) address.

**Platform** N/A**Description**

## 4.52 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
	<i>maximum</i>	Maximum number of IS-IS equal-cost routing entries in the routing table. The value range is <b>1 to 32</b> .

**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
```

## 4.53 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
	<i>value</i>	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 300.

**Configuration** Ruijie(config)# **router isis**

**Examples** Ruijie(config-router)# **max-lsp-lifetime 1500**

**Related  
Commands**

Command	Description
<b>lsp-refresh-interval</b>	Configures the interval for LSP refresh.

**Platform** N/A

**Description**

## 4.54 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
<b>narrow</b>	Uses the old metric style with the router interface metric ranging from 1 to 63.
<b>wide</b>	Uses the new metric style with the router interface metric ranging from 1 to 16777214
<b>transition</b>	Allows the router to send and receive the new and old metric style.
<b>level-1</b>	This metric-style on the Level-1 circuit.
<b>level-2</b>	This metric-style applies on the Level-2 circuit.
<b>level-1-2</b>	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** Ruijie(config)# **router isis**

**Examples** Ruijie(config-router)# **metric-style wide**

Related Commands	Command	Description
	<b>isis metric</b>	Sets the metric of the interface.
	<b>isis wide-metric</b>	Sets the wide metric of the interface.

**Platform** N/A

**Description**

## 4.55 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
	<b>transition</b>	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** The following example configures multi-topology.

**Examples** Ruijie(config) # **router isis**

```
Ruijie(config-router)# address-family ipv6
Ruijie(config-router-af)# multi-topology
```

**Related  
Commands**

Command	Description
<b>router isis</b>	Creates IS-IS instances.

**Platform  
Description**

N/A

## 4.56 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
<i>net-address</i>	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**

```
Ruijie(config)# router isis
```

**Examples**

```
Ruijie(config-router)# net 49.0000.0001.0002.0003.00
```

**Related  
Commands**

Command	Description
<b>router isis</b>	Creates IS-IS instances.

**Platform  
Description**

N/A

## 4.57 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
<b>default</b>	Configures IS-IS disabled interfaces as passive.
<i>interface-type</i>	Indicates the interface type.
<i>interface-number</i>	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
<b>router isis</b>	Creates IS-IS instances.

**Platform Description** N/A

## 4.58 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
<i>process-id</i>	OSPF process ID, in the range of 1 to 65535.
<b>match</b> { <b>internal</b>   <b>external</b> [ <b>1</b>   <b>2</b> ]   <b>nssa-external</b> [ <b>1</b>   <b>2</b> ] }	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 <b>match external</b> is not specified, then redistribute the route of the OSPF <b>external1</b> and <b>external 2</b> . if the 1 or 2 following the <b>match nssa-external</b> is not specified, then redistribute the routes of OSPF <b>nssa-external 1</b> and <b>nssa-external 2</b> .
<b>metric</b> <i>metric-value</i>	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.
<b>metric-type</b> { <b>internal</b>   <b>external</b> }	Sets the metric type of redistributing the route. <b>internal</b> : use the internal metric type. <b>external</b> : use the external metric type. If the metric-type is not specified, the <b>internal</b> type is used by default.
<b>route-map</b> <i>map-tag</i>	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 <i>map-tag</i> shall not be over 32 characters. No route-map is configured by default.
<b>level-1</b>   <b>level-1-2</b>   <b>level-2</b>	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: <b>level-1</b> : redistribute into the Level-1 <b>level-1-2</b> : redistribute into both Level-1 and Level-2. <b>level-2</b> : 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 redistributbue** { **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.

The following example sets the metric value to 10.

#### Configuration

```
Ruijie(config)# router isis
```

#### Examples

```
Ruijie(config-router)# redistribute ospf 1 metric 10 level-1
```

#### Related Commands

Command	Description
<b>redistribute isis [ tag ] level-2 into level-1</b>	Redistributes the reachable routing information from Level-2 into Level-1.
<b>redistribute isis [ tag ] level-1 into level-2</b>	Redistributes the reachable routing information from Level-1 into Level-2.
<b>route-map</b>	Configures the route map.

#### Platform

N/A

#### Description

## 4.59 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
<i>tag</i>	Name of the IS-IS instance.
<b>route-map</b> 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 <i>route-map-name</i> shall not be over 32 characters. No <b>route-map</b> is configured by default.
<b>distribute-list</b> access-list-name	Uses the <b>distribute-list</b> 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 <b>address-family ipv6</b> mode, you can use only the naming

	prefix list with the format being <i>acl-name</i> .						
<b>Defaults</b>	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.						
<b>Command Mode</b>	IS-IS routing process configuration mode or IS-IS <b>address-family ipv6</b> mode.						
<b>Usage Guide</b>	<p>Use the <b>route-map</b> or <b>distribute-list</b> 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.</p> <hr/> <p> You can only choose one of the two parameters <b>route-map</b> and <b>distribute-list</b>.</p> <p>Configure the <b>no distribute isis [ tag ] level-2 into level-1</b> to disable the specified instance redistribution. If the <b>no redistribute</b> is followed by any other parameters, it means that this parameter is restored to the default setting instead of disabling the specified instance redistribution.</p> <p>For example: "<b>no redistribute isis tag1 level-1 into level-2</b>" will disable the isis tag1 redistribution, while "<b>no redistribtue isis tag1 level-1 into level-2 route-map aa</b>" will disable route-map aa filtering during redistribution instead of disabling the isis tag1 redistribution.</p>						
<b>Configuration Examples</b>	<pre>Ruijie(config)# router isis aa Ruijie(config-router)# redistribute isis bb level-1 into level-2</pre>						
<b>Related Commands</b>	<table border="1"> <thead> <tr> <th>Command</th><th>Description</th></tr> </thead> <tbody> <tr> <td><b>redistribute</b></td><td>Redistributes the routing information from another routing protocol.</td></tr> <tr> <td><b>redistribute isis level-2 into level-1</b></td><td>Redistributes the reachable routing information from Level-2 into Level-1.</td></tr> </tbody> </table>	Command	Description	<b>redistribute</b>	Redistributes the routing information from another routing protocol.	<b>redistribute isis level-2 into level-1</b>	Redistributes the reachable routing information from Level-2 into Level-1.
Command	Description						
<b>redistribute</b>	Redistributes the routing information from another routing protocol.						
<b>redistribute isis level-2 into level-1</b>	Redistributes the reachable routing information from Level-2 into Level-1.						
<b>Platform Description</b>	N/A						

## 4.60 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* ] ( **prefix** *ip-address net-mask* | **ipv6-prefix** *ipv6-address/length* )

**no redistribute isis** [ *tag* ] **level-2 into level-1** [ **route-map** *route-map-name* | **distribute-list** *access-list-name* ] ( **prefix** *ip-address net-mask* | **ipv6-prefix** *ipv6-address/length* )

<b>Parameter Description</b>	<table border="1"> <thead> <tr> <th>Parameter</th><th>Description</th></tr> </thead> </table>	Parameter	Description
Parameter	Description		



<i>tag</i>	Name of the IS-IS instance to be redistributed.
<b>route-map</b> <i>route-map-name</i>	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 <i>route-map-name</i> shall not be over 32 characters. <ul style="list-style-type: none"> <li>No route-map is configured by default.</li> </ul>
<b>distribute-list</b> <i>access-list-name</i>	<ul style="list-style-type: none"> <li>Uses the distribute-list to filter the redistributed routes.</li> <li>Access-list-name is the prefix list associated, it can be the standard, extended or naming prefix list. The format is shown as below: <ul style="list-style-type: none"> <li>{&lt;1-99&gt;   &lt;100-199&gt;   &lt;1300-1999&gt;   &lt;2000-2699&gt;   <i>acl-name</i>}</li> </ul> </li> <li>In the IS-IS address-family ipv6 mode, you can use only the naming prefix list with the format being <i>acl-name</i>.</li> </ul>

**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 redistribtue isis tag1 level-2 into level-1 route-map a**" will disable route-map aa filtering during redistribution instead of disabling the isis *tag1* redistribution.

**Configuration** Ruijie(config)# router isis aa

**Examples** Ruijie(config-router)# redistribute isis bb level-2 into level-1

**Related Commands**

Command	Description
<b>redistribute</b>	Redistributes the routing information from another routing protocol.
<b>redistribute isis level-1 into level-2</b>	Redistributes the reachable routing information from Level-1 into Level-2.

**Platform** N/A

**Description**

## 4.61 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
<i>tag</i>	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

```
Ruijie# configure terminal
```

### Examples

```
Ruijie(config)# router isis
```

### Related Commands

Command	Description
<b>ip router isis</b>	Enables the IS-IS IPv4 routing protocol on the interface.
<b>ipv6 router isis</b>	Enables the IS-IS IPv6 routing protocol on the interface.
<b>net</b>	Sets the NET address.

### Platform

N/A

### Description

## 4.62 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* ] [ **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
	<b>on-startup</b> <i>seconds</i>	Indicates that an IS-IS node automatically enters the OVERLOAD state after restart. <b>seconds</b> is the duration of the IS-IS node in the OVERLOAD state after restart. The value range is <b>5</b> to <b>86,400</b> in seconds.
	<b>suppress</b>	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.
	<b>interlevel</b>	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 <b>suppress</b> keyword.
	<b>external</b>	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 <b>suppress</b> keyword.
	<b>level-1</b>	Sends LSP packets that carry the OVERLOAD bit only to Level-1 neighbors.
	<b>level-2</b>	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 OVERLOAD 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
```

## 4.63 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** ] *interval*

**no spf-interval**

Parameter Description	Parameter	Description

**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 minimum 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.

**Configuration Examples** The following example sets the minimum 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

## 4.64 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** *ip-address net-mask* [ **level-1** | **level-2** | **level-1-2** ] [metric *number*]  
**no summary-address** *ip-address net-mask*

**Parameter  
Description**

Parameter	Description
<i>ip-address</i>	Indicates the IP address of the summary route.
<i>net-mask</i>	Indicates the subnet mask of the summary route.
<b>level-1</b>	Applies the setting only to Level-1.
<b>level-2</b>	Applies the setting only to Level-2. By default, the setting takes effect for Level-2.
<b>level-1-2</b>	Applies the setting to Level-1 and Level-2.
<i>number</i>	Indicates the metric of the summary route.

**Defaults** By default, no aggregation route is configured.

**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** Ruijie(config) # **router isis**

**Examples** Ruijie(config-router) # **summary-address** 10.10.0.0/24 **level-1-2**

**Related  
Commands**

Command	Description
<b>summary-prefix</b>	Configures the IPv6 aggregation route.

**Platform Description** N/A

## 4.65 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*

**Parameter  
Description**

Parameter	Description
<i>ipv6-prefix / prefix-length</i>	Aggregation network address and the IP prefix length of the aggregation network address.

<b>level-1</b>	Applies to the Level-1 only.
<b>level-2</b>	Applies to the Level-2 only.
<b>level-1-2</b>	Applies to both Level-1 and Level-2.

**Defaults** By default, no aggregation route is configured.

**Command** Address-family ipv6 mode  
**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** Ruijie(config)# **router isis**

**Examples** Ruijie(config-router)# **address-family ipv6**

Ruijie (config-router-af)# **summary-prefix 1000::/96 level-1-2**

**Related  
Commands**

Command	Description
<b>summary-address</b>	Configures the IPv4 aggregation route.

**Platform** N/A

**Description**

## 4.66 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
<i>system-id</i>	Additional system ID. The length is 6 bytes.

**Defaults** No additional system ID is configured by default.

**Command** IS-IS routing process configuration mode  
**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** The following example configures an additional system ID for fragment extension.

**Examples**

```
Ruijie(config)# router isis
Ruijie(config-router)# virtual-system 0000.0000.0034
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

## 4.67 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
<i>vrf-name</i>	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** The following example binds an IS-IS process with a VRF instance.

**Examples**

```
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**

N/A

**Description**

## 4.68 show clns is-neighbor

Use this command to display all IS neighbors to provide the adjacency relationship of routers.

**show clns** [ *tag* ] **is-neighbors** [ *interface-type interface-number* ] [ **detail** ]

**Parameter  
Description**

Parameter	Description
<i>tag</i>	Specifies the IS-IS instance.
<i>interface-type</i> <i>interface-number</i>	Specifies the name of interface.
<b>detail</b>	Displays detailed information of all interfaces.

**Defaults**

N/A

**Command  
Mode**

Privileged EXEC mode, global configuration mode or interface configuration mode.

**Usage Guide**

N/A

**Configuration** The output results of the **show clns is-neighbors detail** command are displayed as below:

**Examples**

```
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
<b>show clns neighbors</b>	Displays all IS neighbors to provide the router

	information and the adjacency relationship of terminal system.
--	--

**Platform** N/A

**Description**

## 4.69 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** [ *interface-type interface-number* ] [ **detail** ]

**Parameter  
Description**

Parameter	Description
<i>tag</i>	Specifies the IS-IS instance.
<i>interface-type</i> <i>interface-number</i>	Specifies the name of the interface.
<b>detail</b>	Displays detailed information of all interfaces.

**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 all IS neighbors to provide the router information and the adjacency relationship of terminal system.

```
Ruijie# show clns neighbors detail
```

```
Area (null):
```

System Id	SNPA	State	Holdtime	Type	Protocol	Interface
r1	00d0.f8bc.de08	Up	7	L1	IS-IS	GigabitEthernet 0/0
		Up	9	L2	IS-IS	GigabitEthernet 0/0

```
Adjacency ID: 1
```

```
Uptime: 00:01:40
```

```
Area Address(es): 49.1111
```

```
IP Address(es): 1.0.0.2
```

```
IPv6 Address(es): fe80::2a9:15ff:fe36:5413
```

```
Level-1 MTID: Standard
```

```
Level-2 MTID: Standard
```

```
Level-1 Protocols Supported: IPv4, IPv6
```

```
Level-2 Protocols Supported: IPv4, IPv6
```

```
BFD(IPv4) session state: Up
```

```
BFD(IPv6) session state: Up
```

**Related  
Commands**

Command	Description
<b>show clns is-neighbors</b>	Displays all IS neighbors to provide the router adjacency relationship.

**Platform** N/A**Description**

## 4.70 show isis counter

Use this command to display various statistics of IS-IS.

**show isis** [ *tag* ] **counter**

**Parameter  
Description**

Parameter	Description
<i>tag</i>	Specifies the IS-IS instance.

**Defaults** N/A

**Command Mode** Privileged EXEC mode, global configuration mode or interface configuration mode.

**Usage Guide** N/A

**Configuration** The output results of the **show clns neighbors details** are displayed as below:

**Examples**

```
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
isisSysStatAttmpToExMaxSeqNums: 0
isisSysStatSeqNumSkips: 0
isisSysStatOwnLSPPurges: 0
isisSysStatIDFieldLenMismatches: 0
isisSysStatMaxAreaAddrMismatches: 0
isisSysStatPartChanges: 0
isisSysStatSPFRuns: 30
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A  
**Description**

## 4.71 show isis database

Use this command to display the LSP database.

**show isis** [ *tag* ] **database** [ *FLAGS* | *LEVEL* | *LSPID* ]

**Parameter  
Description**

Parameter	Description
<i>tag</i>	Specifies the IS-IS instance.
<i>FLAGS</i>	The format is displayed as below: detail verbose detail: detailed information Verbose: more detailed information than the detail.
<i>LEVEL</i>	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
<i>LSPID</i>	Specifies the ID number of LSP to show the corresponding LSP information only.
<i>tag</i>	Specifies the IS-IS instance.

**Defaults** N/A

**Command Mode** Privileged EXEC mode, global configuration mode or interface configuration mode.

**Usage Guide**    N/A

**Configuration**    The output results of the **show isis database detail** command are displayed as below:

**Examples**

```
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** N/A  
**Description**

## 4.72 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
<i>tag</i>	IS-IS instance name

**Defaults** N/A

**Command Mode** Privileged EXEC mode/ global configuration mode/ interface configuration mode

**Usage Guide** N/A

**Configuration** The following example displays the GR information of the IS-IS.

**Examples**

```
Ruijie(config)# show isis graceful-restart
```

```
Area (null):
```

```
Graceful-restart Helper: enabled
```

```
Level 1:
```

```
GigabitEthernet 0/0: RR received: 0
```

```
Level 2:
```

```
GigabitEthernet 0/0: RR received: 0
```

```
Graceful-restart: enabled
```

```
Graceful-period: 400s, Level timer: 60s, Interface timer: 3s
```

```
Instance GR status: not restarting
```

**Related  
Commands**

Command	Description
<b>graceful-restart</b>	Enables the IS-IS GR Restart capability.
<b>graceful-restart grace-period</b>	Configures the maximum interval of the grace-restart.
<b>graceful-restart helper disable</b>	Disables the IS-IS GR Help capability.

<b>graceful-restart</b>	Enables the IS-IS GR Restart capability.
-------------------------	--

**Platform** N/A

**Description**

## 4.73 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
<i>tag</i>	Specifies the IS-IS instance.

**Defaults** N/A

**Command Mode** Privileged EXEC mode/ global configuration mode/ interface configuration mode

**Usage Guide** N/A

**Configuration**

**Examples**

```
Ruijie# show isis hostname

  System ID      Dynamic Hostname      Area (null)
* 5555.5555.5555 Ruijie
  1111.1111.1111 R1

  System ID      Dynamic Hostname      Area 1
* 4444.4444.4444 Ruijie
  2222.2222.2222 R2
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 4.74 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
<i>tag</i>	IS-IS instance
<b>l1</b>	Topology of a specified Level-1 router
<b>level-1</b>	Topology of a specified Level-1 router
<b>l2</b>	Topology of a specified Level-2 router
<b>level-2</b>	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** The following example displays the IPv6 unicast topology information.

**Examples**

```
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

## 4.75 show isis interface

Use this command to display the information about IS-IS interface.

**show isis** [ *tag* ] **interface** [ *interface-type interface-number* ] [ *counter* ]

**Parameter**

Parameter	Description
-----------	-------------



Description		
	<i>tag</i>	Specifies the IS-IS instance name.
	<i>interface-type</i> <i>interface-number</i>	Specifies the Interface name.

**Defaults** N/A

**Command Mode** Privileged EXEC mode, global configuration mode or interface configuration mode.

**Usage Guide** N/A

**Configuration** The following example displays the IS-IS interface.

**Examples**

```
Ruijie# show isis interface

Area (null):
GigabitEthernet 0/0 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 MTID: Standard
    Level-2 MTID: Standard
    Level-1 Metric: 10/10, Priority: 64, Circuit ID: rl.01
    Level-1 Timer intervals configured, Hello: 10s, Lsp: 33ms, Psnp: 2s, Csnp:10s,
    Retransmit:5s
    Level-1 LSPs in queue: 0
    Number of active level-1 adjacencies: 1
    Level-2 Metric: 10/10, Priority: 64, Circuit ID: rl.01
    Level-2 Timer intervals configured, Hello: 10s, Lsp: 33ms, Psnp: 2s, Csnp:10s,
    Retransmit:5s
    Level-2 LSPs in queue: 0
    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)
```

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

## 4.76 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
	<i>tag</i>	Specifies the IS-IS instance.

**Defaults** N/A

**Command Mode** Privileged EXEC mode, global configuration mode or interface configuration mode.

N/A

### Usage Guide

**Configuration** The following example displays the mesh groups.

**Examples** 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** N/A

### Description

## 4.77 show isis neighbors

Use this command to display the IS-IS neighbors..

**show isis** [ *tag* ] **neighbors** [ *detail* ]

Parameter Description	Parameter	Description
	<i>tag</i>	Displays the IS-IS instance.
	<i>detail</i>	Displays the detailed information of all interfaces.

**Defaults** N/A

**Command** Privileged EXEC mode, global configuration mode or interface configuration mode.

**Mode****Usage Guide** N/A**Configuration** The following example displays details of IS-IS neighbors.**Examples**

```
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    GigabitEthernet 0/0
           L2   1.0.0.2      Up     9         r1.01    GigabitEthernet 0/0

Adjacency ID: 1
Uptime: 00:06:25
Area Address(es): 49.1111
SNPA: 00d0.f8bc.de08
IPv6 Address(es): fe80::2a9:15ff:fe36:5413
Level-1 MTID: Standard
Level-2 MTID: Standard
Level-1 Protocols Supported: IPv4, IPv6
Level-2 Protocols Supported: IPv4, IPv6
BFD(IPv4) session state: Up
BFD(IPv6) session state: Up
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A  
**Description**

## 4.78 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
<i>tag</i>	IS-IS instance.

**Defaults** -**Command Mode** Privileged EXEC mode, global configuration mode, and interface configuration mode

**Default Level** 14

**Usage Guide** N/A

**Configuration Examples**

```
Ruijie# show isis virtual-neighbors
```

```
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. <b>UP</b> indicates the level at which the extended LSP fragment is created.

## 4.79 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

```

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 for the instance.
Two-way-maintain	Indicates whether the two-way maintenance function is enabled for the instance.

## 4.80 show isis topology

Use this command to display the topology of the IS-IS router connection.

**show isis** [ *tag* ] **topology** [ *I1* | *I2* | *level-1* | *level-2* ]

Parameter	Parameter	Description
-----------	-----------	-------------

<b>Description</b>		
	<i>tag</i>	Specifies the IS-IS instance.
	<b>I1</b>	Specifies the topology of Level-1.
	<b>level-1</b>	Specifies the topology of Level-1.
	<b>I2</b>	Specifies the topology of Level-2.
	<b>level-2</b>	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** The following example displays all IS-IS neighbors:

**Examples**

```
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       --
```

<b>Related Commands</b>	Command	Description
	N/A	N/A

**Platform Description** N/A

## 5 BGP4 Commands

### 5.1 address-family ipv4

Use this command to enter IPv4 address family configuration mode to configure BGP configuration mode. Use the **no** or **default** form of this command to exit BGP address configuration mode.

**address-family ipv4 [unicast|multicast|mdt]**

**no address-family ipv4 [unicast|multicast|mdt]**

**default address-family ipv4 [ unicast ]**

**Parameter**  
**Description**

Parameter	Description
<b>unicast</b>	Optional, detailed IPv4 unicast address prefix
<b>multicast</b>	Optional, detailed IPv4 multicast address prefix
<b>mdt</b>	Optional, detailed IPv4 MDT address prefix

**Defaults**

The configuration mode is unicast address prefix by default.

**Command**  
**Mode**

BGP 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**.

You can enter the multicast mode to configure the BGP of the multicast topology, which is used for RPF detection

mdt address family mode to configure the BGP of the multicast topology VPN, which is used for ob of the IPv4 multicast routing protocol.

You can enter taining the cross-domain exit agent in the IPv4 multicast routing protocol.

**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
<b>exit-address-family</b>	Exits the mode.

**Platform**  
**Description**

None



## 5.2 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** or **default** form of this command to restore the default setting.

**address-family ipv4 vrf vrf-name**

**no address-family vrf vrf-name**

**default address-family ipv4 vrf vrf-name**

Parameter	Parameter	Description
Description	vrf-name	VRF name

**Defaults** No vrf is defined by default.

**Command**

**Mode** BGP configuration mode

You can execute this command to configure or exit the exchange of route information between PEs and CEs.

**Usage  
Guide**

To return to BGP configuration mode, run the **exit-address-family** command.

If IPv4 VRF and IPv6 VRF address family modes of the same VRF are activated at the same time, and the same neighbor is activated in two address family modes, the neighbor's global commands will be displayed in both address family modes at the same time, while its address family commands will be displayed only under respective address family modes.

**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
<b>exit-address-family</b>	Exits the configuration mode.

**Platform**

**Description** N/A

## 5.3 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
<b>unicast</b>	Optional, enters IPv6 unicast address-family configuration mode.

**Defaults** The configuration mode is unicast address prefix by default.

**Command**

**Mode** BGP configuration mode or BGP Scope configuration mode

**Usage**

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.

**Guide**

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
<b>exit-address-family</b>	Exits the mode.

**Platform**

**Description** None

## 5.4 address-family ipv6 vrf

Use this command to enter BGP configuration mode, enable the IPv6 route information exchange function under a vrf. Use **no** or **default** 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*

**default address-family ipv6 vrf** *vrf-name*

**Parameter**  
**Description**

Parameter	Description
<i>vrf-name</i>	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** The following example enters the IPv6 VRF address family configuration mode.

**Examples**

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family ipv6 vrf vpn1
```

**Configuration Examples**

Command	Description
<code>exit-address-family</code>	Exits the mode.

**Platform** N/A

**Description**

## 5.5 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 setting.

**address-family l2vpn { evpn }**

**no address-family l2vpn { evpn }**

**default address-family l2vpn { evpn }**

**Parameter Description**

Parameter	Description
<b>evpn</b>	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

### Related Commands

Command	Description
N/A	N/A

### Platform

Description N/A

## 5.6 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 setting.

**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 Commands

Command	Description
N/A	N/A

### Platform

Description N/A

## 5.7 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 setting.

**advertise ipv6 unicast**

**no advertise ipv6 unicast**

**default advertise ipv6 unicast**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** The IPv6 VRF re-distribution function is disabled by default.

**Command**

**Mode** BGP L2VPN EVPN address family mode.

Limitations on re-distribution of IPv6 unicast routes into BGP:

**Usage**

**Guide**

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 IPv6 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	Command	Description
Commands	N/A	N/A

**Platform**

**Description** N/A

## 5.8 aggregate-address (IPv4)

Use this command to set the aggregate IPv4 route. Use the **no** or **default** form of this command to restore the default setting.

**aggregate-address *ip-address mask* [as-set] [summary-only] [ attribute-map *map-tag* ]**

**no aggregate-address**

**default aggregate-address** *ip-address mask*

**Parameter  
Description**

Parameter	Description
<i>ip address</i>	IP address of the aggregate route
<i>mask</i>	Mask of the aggregate route
<b>as-set</b>	Keeps the AS path information of the path in the aggregate address range.
<b>summary-only</b>	Advertises only the aggregate route.
<b>attribute-map</b>	Configures the routing policy to control the route attribute.
<i>map-tag</i>	Route map name. Up to 32 characters is allowed.

**Defaults** The address aggregation is not configured by default.

**Command Mode** BGP configuration mode, IPv4 address family configuration mode, or IPv4 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
<b>router bgp</b>	Enables the BGP protocol.

**Platform Description** None

## 5.9 aggregate-address (IPv6)

Use this command to set the aggregate IPv6 route. Use the **no** or **default** form of this command to restore the default setting.

**aggregate-address** *ipv6-network / length* [**as-set**] [**summary-only**] [**attribute-map** *map-tag* ]

**no aggregate-address** *ipv6-network / length*

**default aggregate-address** *ipv6-network/length*

**Parameter  
Description**

Parameter	Description
<i>ipv6-network</i>	IP address prefix of the aggregate route

<i>length</i>	Length of the aggregate route
<b>as-set</b>	Keeps the AS path information of the path in the aggregate address range.
<b>summary-only</b>	Advertises only the aggregate route.
<b>attribute-map</b>	Configures the routing policy to control the route attribute.
<i>map-tag</i>	Route map name. Up to 32 characters is allowed.

**Defaults** The address aggregation is not configured by default.

**Command Mode** BGP IPv6 address-family configuration mode, BGP IPv6 VRF address-family configuration mode or BGP Scope 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 IPv6 route.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family ipv6
Ruijie(config-router-af)# aggregate-address 2008::/90 as-set
```

Related Commands	Command	Description
	<b>router bgp</b>	Enables the BGP protocol.

**Platform Description** None

## 5.10 bgp advertise non-transitive extcommunity

Use this command to allow carried non-transitive extcommunity when BGP is notifying EBGp neighbors of a route. Use the **no** or **default** form of this command to restore the default setting.

**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 extcommunity is removed when notifying EBGp neighbors of a route.

**Command Mode** BGP configuration mode / Scope global configuration mode

**Usage Guide** By default, when notifying EBGP neighbors of a route, neighbors will not be notified of extcommunity with the "non-transitive" flag. This configuration can enable the notification of non-transitive extcommunity.

 Non-transitive extcommunity will be carried when notifying alliance EBGP or IBGP neighbors of a route.

**Configuration** The following example allows carried non-transitive extcommunity.

**Examples**

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp advertise non-transitive extcommunity
```

Configuration Examples	Command	Description
	router bgp	Enables BGP protocol.

**Platform** N/A

**Description**

## 5.11 bgp always-compare-med

Use this command to compare Multi Exit Discriminator (MED) all the time. Use the **no** or **default** form of this command to restore the default setting.

**bgp always-compare-med**

**no bgp always-compare-med**

**default 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 / 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** The following example compares Multi Exit Discriminator (MED) all the time.

**Examples**

```
Ruijie(config)# router bgp 65000
```



```
Ruijie(config-router)# bgp always-compare-med
```

#### Related Commands

Command	Description
<b>show ip bgp</b>	Displays the BGP route entry.
<b>bgp bestpath med confed</b>	Compares the MED value of paths of peers from different ASs when selecting the optimal path.
<b>bgp bestpath med missing-as-worst</b>	Sets the priority of the path without MED attribute as the lowest when selecting the optimal path.
<b>bgp deterministic-med</b>	Compares paths of peers from the same AS when selecting the optimal path.

#### Platform

**Description** None

## 5.12 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** or **default** form of this command to restore the default setting.

**bgp asnotation dot**

**no bgp asnotation dot**

**default 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 / 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
<b>show ip bgp summary</b>	Displays the related information of BGP neighbor.

### Platform

**Description** None

## 5.13 bgp bestpath as-path ignore

Use this command to disregard the length of the AS path. Use the **no** or **default** form of this command to restore the default setting.

**bgp bestpath as-path ignore**

**no bgp bestpath as-path ignore**

**default bgp bestpath as-path ignore**

### Parameter Description

Parameter	Description
N/A	N/A

### Defaults

The AS path length is considered in choosing the optimal path by default.

### Command Mode

**Mode** BGP configuration mode / Scope global configuration mode

### Usage Guide

BGP will not take the length of the AS path into account when it selects the optimal path as specified in RFC1771. In general, the shorter the length of the AS path, the higher the path priority is. Hence, we take the length of the AS path into account when we select the optimal path. You can determine whether it is necessary to take the length of the AS path into account when you select the optimal path according to the actual condition.

### 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
<b>show ip bgp</b>	Displays the BGP route entry.

**Platform****Description** None

## 5.14 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** or **default** form of this command to restore the default setting.

**bgp bestpath as-path multipath-relax**

**no bgp bestpath as-path multipath-relax**

**default 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 / 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**

The following example enables AS path multipath-relax for BGP multipathing load.

**Examples**

```
Ruijie(config)# router bgp 65530
Ruijie(config-router)# bgp bestpath as-path multipath-relax
```

**Related  
Commands**

Command	Description
<b>router bgp</b>	Enables BGP.
<b>show ip bgp</b>	Displays BGP routing entries.

**Platform**

None

**Description**

## 5.15 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** or **default** form of this command to restore the default setting.

**bgp bestpath compare-confed-aspath**

**no bgp bestpath compare-confed-aspath**

**default bgp bestpath compare-confed-aspath**

Parameter	Description	
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 / Scope global configuration mode	
Usage	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.	
Guide	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	The following example compares the AS path length of the confederation.	
Examples	<pre>Ruijie(config)# router bgp 65000 Ruijie(config-router)# bgp bestpath compare-confed-aspath</pre>	
Related		
Commands	Command	Description
	show ip bgp	Displays the BGP route entry.
	bgp router-id	Sets the BGP Device ID.
Platform		
Description	None	

## 5.16 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** or **default** form of this command to restore the default setting.

**bgp bestpath compare-routerid**

**no bgp bestpath compare-routerid**

**default bgp bestpath compare-routerid**

Parameter	<table><tr><th>Parameter</th><th>Description</th></tr><tr><td>N/A</td><td>N/A</td></tr></table>		Parameter	Description	N/A	N/A
Parameter	Description					
N/A	N/A					
Description						

<b>Defaults</b>	If two paths received from different EBGP peers have the same path, the first one is considered with higher priority by default.						
<b>Command</b>							
<b>Mode</b>	BGP configuration mode / Scope global configuration mode						
<b>Usage</b>	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.						
<b>Guide</b>							
<b>Configuration Examples</b>	<p>The following example compares the router ID of the same external routes.</p> <pre>Ruijie(config)# router bgp 65000 Ruijie(config-router)# bgp bestpath compare-routerid</pre>						
<b>Related Commands</b>	<table><tr><th>Command</th><th>Description</th></tr><tr><td><b>show ip bgp</b></td><td>Displays the BGP route entry.</td></tr><tr><td><b>bgp router-id</b></td><td>Sets the BGP Device ID.</td></tr></table>	Command	Description	<b>show ip bgp</b>	Displays the BGP route entry.	<b>bgp router-id</b>	Sets the BGP Device ID.
Command	Description						
<b>show ip bgp</b>	Displays the BGP route entry.						
<b>bgp router-id</b>	Sets the BGP Device ID.						
<b>Platform</b>							
<b>Description</b>	None						

## 5.17 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** or **default** form of this command to restore the default setting.

**bgp bestpath med confed [missing-as-worst]**

**no bgp bestpath med confed [missing-as-worst]**

**default bgp bestpath med confed [ missing-as-worst ]**

<b>Parameter</b>	<table><tr><th>Parameter</th><th>Description</th></tr><tr><td><b>missing-as-worst</b></td><td>Sets the priority of the path without MED attribute as the lowest.</td></tr></table>	Parameter	Description	<b>missing-as-worst</b>	Sets the priority of the path without MED attribute as the lowest.
Parameter	Description				
<b>missing-as-worst</b>	Sets the priority of the path without MED attribute as the lowest.				
<b>Description</b>					
<b>Defaults</b>	The MED value of the path of the peer inside the AS confederation is not compared by default when selecting the optimal path.				
<b>Command</b>					
<b>Mode</b>	BGP configuration mode / Scope global configuration mode				
<b>Usage</b>	The MED attribute of the path is transferred between the ASs inside the confederation. You may set always comparing this value.				
<b>Guide</b>					

**Configuration**

The following example compares the MED value of the path of the internal peer.

**Examples**

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp bestpath med confed
```

**Related****Commands**

Command	Description
<b>show ip bgp</b>	Displays the BGP route entry.
<b>bgp always-compare-med</b>	Compares the MED value of paths of peers from different ASs when selecting the optimal path.
<b>bgp bestpath med missing-as-worst</b>	Sets the priority of the path without MED attribute as the lowest when selecting the optimal path.
<b>bgp deterministic-med</b>	Compares paths of peers from the same AS when selecting the optimal path.

**Platform****Description**

None

## 5.18 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** or **default** form of this command to restore the default setting.

**bgp bestpath med missing-as-worst**

**no bgp bestpath med missing-as-worst**

**default 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 / 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****Examples**

The following example sets the priority of the path without MED attribute as the lowest.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp bestpath medmissing-as-worst
```

**Related**

Command	Description
---------	-------------

Commands	<b>show ip bgp</b>	Displays the BGP route entry.
	<b>bgp always-compare-med</b>	Compares the MED value of paths of peers from different ASs when selecting the optimal path.
	<b>bgp bestpath med confed</b>	Sets the priority of the path without MED attribute as the lowest when selecting the optimal path.
	<b>bgp deterministic-med</b>	Compares paths of peers from the same AS when selecting the optimal path.

Platform

Description None

## 5.19 bgp client-to-client reflection

Use this command to enable the route reflection function between clients on the device. Use the **no** or **default** form of this command disables the route reflection function between clients.

**bgp client-to-client reflection**

**no bgp client-to-client reflection**

**default bgp client-to-client reflection**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** This function is enabled without the client for route reflection by default.

**Command**

**Mode** BGP configuration mode / Scope global configuration mode

**Usage  
Guide**

In general, it is unnecessary to establish the connection relationship between the clients of the 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
<b>bgp cluster-id</b>	Configures the cluster ID of the route reflector.

<b>neighbor route-reflector-client</b>	Configures the client of the route reflector and configure itself as the route reflector.
--	---

**Platform**

**Description**        None

## 5.20 bgp cluster-id

Use this command to configure the cluster ID of the route reflector. Use the **no** or **default** form of this command to restore it to the default setting.

**bgp cluster-id** *cluster-id*

**no bgp cluster-id**

**default bgp cluster-id**

Parameter	Parameter	Description
<b>Description</b>	<i>cluster-id</i>	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 / 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
	<b>bgp client-to-client reflection</b>	Configures the route reflection between clients.
	<b>neighbor route-reflector-client</b>	Configures the client of the route reflector and configures itself as the route reflector.

**Platform**

**Description**        None



## 5.21 bgp confederation identifier

Use this command to configure the AS confederation identifier. Use the **no** or **default** form of this command to restore the default setting.

**bgp confederation identifier** *as-number*

**no bgp confederation identifier**

**default bgp confederation identifier**

Parameter	Description
<b>Parameter</b> <b>Description</b> <i>as-number</i>	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 or 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** The following example configures the AS confederation identifier.

**Examples**

```
Ruijie(config-router)# bgp confederation identifier 65000
```

Related	Command	Description
<b>Commands</b>	<b>bgp confederation peers</b>	Adds member AS of the AS confederation.

**Platform**  
**Description** None

## 5.22 bgp confederation peers

Use this command to configure member ASs of the AS confederation. Use the **no** or **default** form of this command to restore the default setting.

**bgp confederation peers** *as-number* [...*as-number*]

**no bgp confederation peers** *as-number* [...*as-number*]

**default bgp confederation peers** [ *as-number* [...*as-number*] ]

Parameter	Description
<b>Parameter</b> <b>Description</b> <i>as-number</i>	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 or 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 15 members of a confederation at one time. For more members, enter them for several times.

**Configuration** The following example configures member ASs of the AS confederation.

**Examples**  
Ruijie(config-router)# bgp confederation peers 65000 65100

Related	Command	Description
<b>Commands</b>	<b>bgp confederation identifier</b>	Configures the confederation identifier.

**Platform**

**Description** None

## 5.23 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** or **default** form of this command to restore the default setting.

**bgp dampening** [*half-life* [*reusing suppressing duration*] | *route-map name*]

**no bgp dampening**

**default bgp dampening**

### Parameter Description

Parameter	Description
<i>half-life</i>	Half-life period, ranging from 1 to 45 minutes
<i>reusing</i>	When the penalty value reaches this value, the routing suppression is cancelled. The value ranges from 1 to 10000.
<i>suppressing</i>	When the penalty value reaches this value, routing is suspended. The value ranges from 1 to 20000.
<i>duration</i>	Maximum time for routing suppression, ranging from 1 to 255 minutes
<i>name</i>	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 IPv6 L2VPN 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 duration value and calculated using the following formula:  $\text{Penalty upper limit} = 2^{\text{(Duration/Half-life)}} \times \text{Reusing}$ . In addition, the penalty upper limit cannot be greater than 20000. Therefore, the duration, half-life, and reusing values need to be adjusted based on the network conditions. The relationship among these parameters are as follows:

$\text{Half-life} \leq \text{Duration}$

$\text{Reusing} \leq \text{Suppressing} \leq \text{Penalty upper limit}$

You can also specify only the half-life value. In this case, the duration 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.

**Configuration** The following example enables the routing attenuation and set the attenuation parameters.

**Examples** Ruijie(config-router)# bgp dampening 30 1500 10000 120

**Related  
Commands**

Command	Description
<b>clear ip bgp dampening</b>	Clears the BGP suppression and cancels the suppression for the routes.
<b>show ip bgp dampening dampened-paths</b>	Displays the suppressed route information.

**Platform**

**Description** None

## 5.24 bgp default ipv4-unicast

Use this command to set the IPv4 unicast address as the default address family. Use the **no** or **default** form of this command to restore the default setting.

**bgp default ipv4-unicast**

**no bgp default ipv4-unicast**

**default 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 or BGP Scope Global configuration mode

**Usage**

**Guide** This command is used to set the default address family of BGP as the IPv4 unicast address.

**Configuration** The following example sets the IPv4 unicast address as the default address family.

**Examples** Ruijie(config-router)# default ipv4-unicast

Related Commands	Command	Description
	<b>address-family ipv4</b>	Enters the IPv4 address mode.

**Platform**

**Description** None

## 5.25 bgp default local-preference

Use this command to set the default local-preference attribute value. Use the **no** or **default** form of this command to restore the default setting.

**bgp default local-preference *value***

**no bgp default local-preference**

**default bgp default local-preference**

Parameter Description	Parameter	Description
	<i>value</i>	Local priority attribute, in the range from 0 to 4294967295

**Defaults** The local preference value is 100 by default.

**Command**

**Mode** BGP configuration mode or BGP Scope configuration mode.

**Usage** 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.

**Guide** The BGP speaker sends the external route received to the IBGP peers to add the local priority value.

**Configuration** The following example sets the default local-preference attribute value.

**Examples**  

```
Ruijie(config-router)# bgp default local-preference 200
```

Related Commands	Command	Description
	<b>show ip bgp</b>	Displays the BGP route entry.
	<b>bgp always-compare-med</b>	Allows comparing the MED value of the path of the peer from different ASs when electing the optimal path.
	<b>bgp bestpath med confed</b>	Allows comparing the MED value of paths of internal peers from AS community when electing the optimal path.
	<b>bgp bestpath med missing-as-worst</b>	Allows setting the priority of the path without MED attribute as the lowest when electing the optimal path.

**Platform**

**Description** None

## 5.26 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** or **default** form of this command to restore the default setting.

**bgp deterministic med**

**no bgp deterministic med**

**default bgp deterministic-med**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** This function is disabled by default.

**Command**

**Mode** BGP configuration mode or 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** The following example sets the comparing preferentially MED values.

**Examples**

```
Ruijie(config-router)# bgp deterministic med
```

**Related  
Commands**

Command	Description
<b>show ip bgp</b>	Displays the BGP route entry.
<b>bgp always-compare-med</b>	Compares the MED value of paths of peers from different ASs when selecting the optimal path.
<b>bgp bestpath med confed</b>	Sets the priority of the path without MED attribute as the lowest when selecting the optimal path.
<b>bgp bestpath med missing-as-worst</b>	Compares paths of peers from the same AS when selecting the optimal path.

**Platform**

**Description** None

## 5.27 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** or **default** form of this command to disable this function.

**bgp enforce-first-as**

**no bgp enforce-first-as****default bgp enforce-first-as**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** This function is enabled by default.

**Command**

**Mode** BGP configuration mode or 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**

The following example rejects the UPDATE messages whose first AS\_PATH path section is not the neighbor-configured AS number.

**Examples**

```
Ruijie(config-router)# bgp enforce-first-as
```

**Related****Commands**

Command	Description
<b>show ip bgp</b>	Displays the BGP route entry.

**Platform**

**Description** None

## 5.28 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** or **default** form of this command to disable this function.

**bgp fast-external-fallover****no bgp fast-external-fallover****default bgp fast-external-fallover**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** This function is enabled by default.

**Command**

**Mode** BGP configuration mode or BGP Scope Global configuration mode

**Usage**

**Guide** This command takes effect only for the directly-connected EBGP neighbor.

**Configuration** The following example creates the fast BGP session.

**Examples**

```
Ruijie(config-router)# bgp faster-external-fallover
```

Related Commands	Command	Description
	router bgp	Enables the BGP protocol.

**Platform**

**Description** None

## 5.29 bgp fast-reroute

Use this command to enable BGP Fast Reroute. Use the **no** or **default** form of this command to restore the default setting.

**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 IPv4 VRF address family configuration mode/ BGP scope global configuration mode.

**Usage  
Guide**

-  The BGP Fast Reroute function is supported in the BGP IPv4 unicast address family configuration mode and the BGP IPv4 VRF address family configuration mode.
-  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 in the BGP IPv4 VRF address family configuration mode, 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.

**Configuration** The following example enables BGP Fast Reroute.

**Examples**

```
Ruijie(config)# router bgp 65530
Ruijie(config-router)# bgp faster-reroute
```

Related	Command	Description



Commands	N/A	N/A
----------	-----	-----

**Platform****Description** N/A

## 5.30 bgp graceful-restart

Use this command to enable the global BGP graceful restart function. Use the **no** or **default** form of this command to disable BGP graceful restart.

**bgp graceful-restart****no bgp graceful-restart****default bgp graceful-restart**


Parameter	Parameter	Description
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 or BGP Scope Global configuration mode

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.

**Usage  
Guide**

 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**

Command	Description
---------	-------------

<b>Commands</b>	<b>router bgp</b>	Enables the BGP protocol.
	<b>bgp graceful-restart restart-time</b>	Configures the restart time of the BGP graceful-restart.

**Platform**

**Description** N/A

## 5.31 bgp graceful-restart disable

Use this command to disable GR capability of a BGP address family. Use the **no** or **default** form of this command to restore the default setting.

**bgp graceful-restart disable**

**no bgp graceful-restart disable**

**default bgp graceful-restart disable**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	N/A	N/A

**Defaults** The function is enabled by default.

**Command Mode** BGP configuration mode, BGP IPv4 Unicast address family configuration mode, BGP IPv4 VRF address family configuration mode, BGP L2VPN /EVPN address family 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 disables the graceful restart function of the BGP IPv4 address family.

```
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
```

<b>Configuration Examples</b>	<b>Command</b>	<b>Description</b>
	<b>bgp graceful-restart</b>	Enables BGP's GR capability.
	<b>address-family ipv4</b>	Enters BGP IPv4 address family mode.

**Platform** N/A

**Description**

## 5.32 bgp graceful-restart restart-time

Use this command to configure the restart time of the BGP graceful-restart. Use the **no** or **default** form of this command to restore the default setting.

**bgp graceful-restart restart-time *restart-time***

**no bgp graceful-restart restart-time**

**default bgp graceful-restart restart-time**

Parameter	Description
<b>Parameter</b> <b>Description</b> <i>restart-time</i>	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 or BGP Scope Global configuration mode.

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.

### Usage Guide

-  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	Command	Description
<b>Commands</b>	<b>bgp graceful-restart</b>	Enables the BGP graceful-restart.

**Platform** N/A

**Description**

## 5.33 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** or **default** form of this command to restore the default setting.

**bgp graceful-restart stalepath-time stalepath-time *time***

**no bgp graceful-restart stalepath-time**

**default bgp graceful-restart stalepath-time**

**Parameter  
Description**

Parameter	Description
<i>time</i>	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
```

**Related  
Commands**

Command	Description
<b>bgp graceful-restart</b>	Enables the BGP graceful-restart.

**Platform  
Description**

N/A

## 5.34 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 setting.

**bgp initial-advertise-delay** *delay-time* [ *startup-time* ]

**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 setting.

**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
	<i>delay-time</i>	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.
	<i>startup-time</i>	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.
	<i>prefix-list-name</i>	Name of the prefix-list. It cannot exceed 32 characters.
	<b>wait-for-controller</b>	Configures the <b>wait-for-controller</b> 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

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.

**Usage**

**Guide**

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.

The following example configures initial delay to 60 seconds within 500 seconds after BGP restart.

**Configuration****Examples**

```
Ruijie(config)# router bgp 500
Ruijie(config-router)# bgp initial-advertise-delay 60 500
```

**Related  
Commands**

Command	Description
<b>bgp graceful-restart</b>	Enables the BGP graceful-restart.

**Platform  
Description**

N/A

## 5.35 bgp log-neighbor-changes

Use this command to log the BGP status changes without turning on debug. Use the **no** or **default** form of this command to disable this function.

**bgp log-neighbor-changes**

**no bgp log-neighbor-changes**

**default bgp log-neighbor-changes**

**Parameter  
Description**

Parameter	Description
N/A	N/A

**Defaults**

This function is enabled by default.

**Command  
Mode**

BGP configuration mode or 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**

Command	Description
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<b>Commands</b>	<b>router bgp</b>	Enables the BGP protocol.
-----------------	-------------------	---------------------------

**Platform**

**Description**      None

## 5.36 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 setting.

**bgp mac-mobility** *timer count*

**no bgp mac-mobility**

**default bgp mac-mobility**

**Parameter**

**Description**

Parameter	Description
<i>timer</i>	Indicates the time using to detect the MAC mobility. During the time, if the MAC mobility is detected for <i>count</i> times, then the MAC conflict occurs and syslog will be printed to inform users. By default, the time is 180s and ranges from 1s to 3600s.
<i>count</i>	Indicates the detection times. By default, it is 5 times and ranges from 1 to 360.

**Defaults**

This function is enabled by default.

*timer*: 180s

*count*: 5

**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.

**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

## 5.37 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
	<i>number</i>	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** The routes exceeding the AS number limit are discarded directly, After changing the configuration,  
**Guide** use the **clear** command to reset the neighbor and make the configuration take effect.

**Configuration** The following example sets the maximum number of ASs in the BGP AS-PATH attribute to 100.

**Examples**  
Ruijie(config-router)# bgp maxas-limit 100

Related Commands	Command	Description
	N/A	N/A

**Platform**

**Description** N/A

## 5.38 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** or **default** form of this command to restore the default setting.

**bgp mp-error-handle session-retain** [**refresh-timer** *time* ]

**no bgp mp-error-handle session-retain**

**default bgp mp-error-handle session-retain**

Parameter Description	Parameter	Description
	<b>refresh-timer</b> <i>time</i>	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 or 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 to 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** N/A

**Description**

## 5.39 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** or **default** form of this command to restore the default setting.

**bgp nexthop trigger delay *delay-time***

**no bgp nexthop trigger delay**

**default bgp nexthop trigger delay**

Parameter Description	Parameter	Description
	<i>delay-time</i>	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.

<b>Command Mode</b>	BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode, BGP L2VPN 、EVPN address family configuration mode.
<b>Usage Guide</b>	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.

<b>Configuration Examples</b>	The following example retains BGP sessions when BGP protocol detects errors in multi-protocol route attributes. <pre>Ruijie(config-router)# bgp nexthop trigger delay 30</pre>
-------------------------------	---

<b>Related Commands</b>	Command	Description
	<b>bgp nexthop trigger enable</b>	Enables the nexthop trigger.

<b>Platform Description</b>	None
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## 5.40 bgp nexthop trigger enable

Use this command to enable the nexthop trigger update function. Use the **no** or **default** form of this command to disable this function.

**bgp nexthop trigger enable**

**no bgp nexthop trigger enable**

**default bgp nexthop trigger enable**

<b>Parameter Description</b>	Parameter	Description
	N/A	N/A

<b>Defaults</b>	This function is enabled by default.
-----------------	--------------------------------------

<b>Command Mode</b>	BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode, BGP L2VPN 、EVPN address family configuration mode.
---------------------	--

<b>Usage Guide</b>	This command is used to enable the nexthop trigger update function.
--------------------	---

<b>Configuration Examples</b>	The following example enables the nexthop trigger update function. <pre>Ruijie(config-router)# bgp nexthop trigger enable</pre>
-------------------------------	--

<b>Related</b>	Command	Description
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<b>Commands</b>	<b>Bgp nexthop trigger delay</b>	Sets the delay time for updating the routing table when the nexthop changes.

**Platform**

**Description**          None

## 5.41 bgp notify unsupport-capability

Use this command to enable the neighbor address family capability detection function. Use the **no** or **default** form of this command to restore the default setting.

**bgp notify unsupport-capability**

**no bgp notify unsupport-capability**

**default bgp notify unsupport-capability**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	N/A	N/A

**Defaults**          This function is disabled by default.

**Command  
Mode**          BGP configuration mode or 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**    The following example enables the neighbor address family capability detection function.

**Examples**

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp notify unsupport-capability
```

<b>Configuration Examples</b>	<b>Command</b>	<b>Description</b>
	<b>router bgp</b>	Enables BGP protocol.

**Platform**          N/A

**Description**

## 5.42 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** or **default** form of this command to disable this function.

**bgp redistribute-internal**

**no bgp redistribute-internal**

**default bgp redistribute-internal**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** IBGP routes are allowed by default to be redistributed to the IGP protocol.

**Command Mode** BGP configuration mode, IPv4/IPv6 Unicast address family configuration mode, IPv4/IPv6 VRF address family configuration mode or BGP Scope 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
	<b>redistribute</b>	Redistributes routes learned from other protocols.

**Platform Description** None

## 5.43 bgp router-id

Use this command to configure the ID-IP address of the device. Use the **no** or **default** form of this command to restore the default setting.

**bgp router-id *ip-address***

**no bgp router-id**

**default bgp router-id**

Parameter	Parameter	Description
Description	<i>ip address</i>	IP 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 IPv4/IPv6 VRF address family configuration mode or BGP Scope Global 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
<b>show ip bgp dampening dampened-paths</b>	Displays the suppressed routing information.
<b>bgp dampening</b>	Enables the route dampening function and sets dampening parameters.

**Platform**

**Description** None

## 5.44 bgp scan-rib disable

Use this command to update the routing table by event triggering. Use the **no** or **default** form of this command to restore the default setting.

**bgp scan-rib disable**

**no bgp scan-rib disable**

**default 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 L2VPN 、EVPN address family configuration mode .

**Usage Guide**

BGP provides two route update mechanisms: regular-scanning update and event-triggering update. Regular-scanning update indicates that BGP uses an internal timer to start scanning regularly and update the routing table. Event-triggering update indicates that BGP starts scanning and updates the routing table when the BGP configuration commands are changed due to user configuration or the next hop of a BGP route changes.

**Configuration** The following example configures the timely scan for the BGP protocol.

**Examples** Ruijie(config-router)# bgp scan-rib disable

Related Commands	Command	Description
	<b>bgp scan-time</b>	Configures the interval for the BGP timely scan.

**Platform**

**Description** None

## 5.45 bgp scan-time

Use this command to configure the interval for the BGP timely scan. Use the **no** or **default** form of this command to restore the default setting.

**bgp scan-time *time***

**no bgp scan-time**

**default bgp scan-time**

Parameter Description	Parameter	Description
	<i>time</i>	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.

**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
	<b>bgp scan-rib enable</b>	Enables timely scan of the routing table by BGP.

**Platform**

**Description** None

## 5.46 bgp tcp-source-check disable

Use this command to configure BGP's TCP source check function. Use **no** or **default** form of this command to disable this function.

**bgp tcp-source-check disable**  
**no bgp tcp-source-check disable**  
**default bgp tcp-source-check disable**

Parameter Description	Parameter	Description
	-	-

**Defaults** This function is enabled by default.

**Command Mode** BGP configuration mode or 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** The following example configures BGP's TCP source check function.

**Examples**

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp tcp-source-check disable
```

Configuration Examples	Command	Description
	<b>router bgp</b>	Enables BGP protocol.

**Platform** N/A  
**Description**

## 5.47 bgp timer accuracy-control

Use this command to configure BGP's internal timer accuracy control. Use **no** or **default** form of this command to restore the default setting.

**bgp timer accuracy-control**  
**no bgp timer accuracy-control**  
**default bgp timer accuracy-control**

Parameter Description	Parameter	Description
	-	-

**Defaults** This function is disabled by default.

**Command Mode** BGP 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** The following example configures BGP's internal timer accuracy control.

**Examples**

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp timer accuracy-control
```

**Configuration Examples**

Command	Description
<b>router bgp</b>	Enables BGP protocol.

**Platform** N/A

**Description**

## 5.48 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** or **default** 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**

**default bgp update-delay**

**Parameter Description**

Parameter	Description
<i>delay-time</i>	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 or 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.

The following example sets the update-delay time to 200 seconds.

#### Configuration Examples

```
Ruijie(config)# router bgp 500
Ruijie(config-router)# bgp graceful-restart
Ruijie(config-router)# bgp update-delay 200
```

#### Related Commands

Command	Description
<b>bgp graceful-restart</b>	Enables the BGP graceful-restart.

#### Platform

**Description** None

## 5.49 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 setting.

**bgp update-rate** *route-number*

**no bgp update-rate**

**default bgp update-rate**

#### Parameter Description

Parameter	Description
<b>route-number</b>	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

**Mode** BGP configuration mode/ BGP scope global configuration mode.

#### Usage

By default, BGP will directly calculate the routes which it receives and send the routes to the

#### Guide

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

## 5.50 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 setting.

**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
<b>af-mode</b>	CLI is displayed in address family configuration mode.
<b>scope-mode</b>	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

## 5.51 clear bgp all

Use this command to reset all BGP address-families. The content to be reset depends on the further parameters .

**clear bgp all** [ *as number* ] [ **soft** ] [ **in** | **out** ]

**Parameter  
Description**

Parameter	Description
<i>none parameter</i>	Resets peer sessions in all address-families.
<i>as-number</i>	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.
<b>in</b>	Soft-resets the received routing information.
<b>out</b>	Soft-resets the redistributed routing information.
<b>soft</b>	Soft-resets all routing information received/sent from/to the specified peer.
<b>soft in</b>	Soft-resets the received routing information.
<b>soft out</b>	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
	<b>clear bgp ipv4 unicast</b>	Resets the IPv4 unicast address-family.

**Platform**

**Description** None

## 5.52 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 all peer-group** *peer-group-name* [ **soft** ] [ **in** | **out** ]

### Parameter Description

Parameter	Description
<i>peer-group-name</i>	Resets a specific peer group.
<b>in</b>	Soft-resets received route information.
<b>out</b>	Soft-resets allocated route information.
<b>soft</b>	Soft-resets received and sent route information.
<b>soft in</b>	Soft-resets received route information.
<b>soft out</b>	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
<b>clear bgp ipv4 unicast</b>	Resets BGP's IPv4 unicast address families.

### Platform

-

### Description

## 5.53 clear bgp ipv4 unicast

Use this command to reset BGP IPv4 unicast address families. The reset content is determined by further parameters.

**clear bgp ipv4 unicast** [ **vrf** *vrf-name* ] { \* | *as-number* | *peer-address* } [ **soft** ] [ **in** | **out** ]

### Parameter Description

Parameter	Description
<i>vrf-name</i>	VRF name
*	Resets all peer group sessions under address families.

<i>as-number</i>	Resets sessions with all members in the specified AS.
<i>peer-address</i>	Resets sessions with the specified peer.
<b>in</b>	Resets received route information.
<b>out</b>	Resets allocated route information.
<b>soft</b>	Soft-resets received and sent route information.
<b>soft in</b>	Soft-resets received route information.
<b>soft out</b>	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** N/A

**Description**

## 5.54 clear bgp ipv4 unicast dampening

Use this command to clear the flap information and disable route dampening.

**clear bgp ipv4 unicast [ vrf *vrf-name* ] dampening [ *ip-address* [ *mask* ] ]**

**Parameter Description**

Parameter	Description
<i>vrf-name</i>	VRF name.
-	Clears the flap information of all routes.
<i>address</i>	IP address
<i>mask</i>	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** The following example clears the flap information and disables route dampening.

**Examples** 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

## 5.55 clear bgp ipv4 unicast external

Use this command to reset all EBGp connections.

**clear bgp ipv4 unicast [ vrf *vrf-name* ] external [ soft ] [ in | out ]**

Parameter Description	Parameter	Description
	<i>vrf-name</i>	VRF name.
	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**

**Mode** Privileged EXEC mode

**Usage**

**Guide** This command is used to reset the specified external BGP connection.

**Configuration** The following example resets all EBGp connections.

**Examples** 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** None

## Description

## 5.56 clear bgp ipv4 unicast flap-statistics

Use this command to clear the route flap information.

**clear bgp ipv4 unicast [ vrf *vrf-name* ] flap-statistics [ *address* [ *mask* ] ]**

**Parameter  
Description**

Parameter	Description
<i>vrf-name</i>	VRF name.
-	Clears all route flap information
<i>address</i>	IP address
<i>mask</i>	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** The following example clears the route flap information.

**Examples** Ruijie# clear bgp ipv4 unicast flap-statistics

**Related  
Commands**

Command	Description
<b>bgp dampening</b>	Enables the route dampening function and sets dampening parameters.
<b>show ip bgp</b>	Displays the BGP route entry.

**Platform**

**Description** None

## 5.57 clear bgp ipv4 unicast peer-group

Use this command to reset the session with all members in the peer group.

**clear bgp ipv4 unicast [ vrf *vrf-name* ] peer-group *peer-group-name* [ *soft* ] [ *in* | *out* ]**

**Parameter  
Description**

Parameter	Description
<i>vrf-name</i>	VRF name
<i>peer-group-name</i>	Name of the peer group
<b>in</b>	Resets received route information.

<b>out</b>	Resets allocated route information.
<b>soft</b>	Soft-resets all routing information received/sent from/to the specified peer.
<b>soft in</b>	Soft-resets for the received routing information.
<b>soft out</b>	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** The following example resets the session with all members in the peer group.

**Examples** Ruijie# clear bgp ipv4 unicast peer-group my-group in

**Related  
Commands**

Command	Description
<b>clear ip bgp</b>	Resets the BGP session.
<b>show ip bgp</b>	Displays the BGP route entry.

**Platform**

**Description** None

## 5.58 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 ipv4 unicast [ vrf *vrf-name* ] table-map**

**Parameter  
Description**

Parameter	Description
<i>vrf-name</i>	VRF name

**Defaults** -

**Command** Privileged EXEC mode

**Mode**

**Usage Guide** Re-apply table-map setting and update allocated core route table information.

**Configuration** -

**Examples**



Parameter Description	Command	Description
	<b>clear ip bgp</b>	Resets BGP's IPv4 unicast address families.

Platform -

Description

## 5.59 clear bgp ipv6 unicast

Use this command to reset BGP's IPv6 unicast address families.

**clear bgp ipv6 unicast** [ **vrf** *vrf-name* ] { \* | *as-number* | *peer-address* } [ **soft** ] [ **in** | **out** ]

Parameter Description	Parameter	Description
	<i>vrf-name</i>	VRF name
	*	Resets all peer group sessions under address families.
	<i>as-number</i>	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.
	<i>peer-address</i>	Resets sessions with the specified peer.
	<b>in</b>	Resets received route information.
	<b>out</b>	Resets allocated route information.
	<b>soft</b>	Soft-resets received and sent route information.
	<b>soft in</b>	Soft-resets received route information.
	<b>soft out</b>	Soft-resets allocated route information.

Defaults -

**Command** Privileged EXEC mode  
**Mode**

**Usage Guide** The function is similar with **clear bgp ipv4 unicast**, but applies to different address families.

**Configuration** -

**Examples**

Configuration Examples	Command	Description
	<b>clear bgp ipv4 unicast</b>	Resets BGP's IPv4 unicast address families.

**Platform** -

**Description**

## 5.60 clear bgp ipv6 unicast dampening

Use this command to clear flap information and disable route dampening.

**clear bgp ipv6 unicast** [ **vrf** *vrf-name* ] **dampening** [ *ip-address* [ *mask* ] ]

**Parameter  
Description**

Parameter	Description
<i>vrf-name</i>	VRF name
-	Clears all routes' flap information.
<i>ip-address</i>	IP address
<i>mask</i>	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** The following example clears flap information and disables route dampening.

**Examples** Ruijie# clear bgp ipv6 unicast dampening 192.168.0.0 255.255.0.0

**Configuration  
Examples**

Command	Description
<b>bgp dampening</b>	Enables the route dampening function and sets dampening parameters.

**Platform** -

**Description**

## 5.61 clear bgp ipv6 unicast external

Use this command to reset all EBGp connection of IPv6 unicast address families.

**clear bgp ipv6 unicast** [ **vrf** *vrf-name* ] **external** [ **soft** ] [ **in** | **out** ]

**Parameter**

Parameter	Description
-----------	-------------

<b>Description</b>		
	<i>vrf-name</i>	VRF name
	<b>in</b>	Resets received route information.
	<b>out</b>	Resets allocated route information.
	<b>soft</b>	Soft-resets received and sent route information.
	<b>soft in</b>	Soft-resets received route information.
	<b>soft out</b>	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** The following example resets all EBGp connection of IPv6 unicast address families.

**Examples** Ruijie# clear bgp ipv6 unicast external in

<b>Configuration Examples</b>	Command	Description
	<b>clear ip bgp</b>	Resets BGP sessions.
	<b>show ip bgp neighbors</b>	Displays BGP neighbors' information.

**Platform** -

**Description**

## 5.62 clear bgp ipv6 unicast flap-statistics

Use this command to clear IPv6 unicast address families' route flap statistics.

**clear bgp ipv6 unicast [ vrf *vrf-name* ] flap-statistics [ address [ mask ] ]**

<b>Parameter Description</b>	Parameter	Description
	<i>vrf-name</i>	VRF name
	-	Clears all route information's flap information.
	<i>address</i>	IP address
	<i>mask</i>	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** The following example clears IPv6 unicast address families' route flap statistics.

**Examples** Ruijie# clear bgp ipv6 unicast flap-statistics

Configuration Examples	Command	Description
	<b>bgp dampening</b>	Enables the route dampening function and sets dampening parameters.
	<b>show ip bgp</b>	Displays BGP route entries.

**Platform** -

**Description**

## 5.63 clear bgp ipv6 unicast peer-group

Use this command to reset sessions with all members in the peer group.

**clear bgp ipv6 unicast** [ **vrf** *vrf-name* ] **peer-group** *peer-group-name* [ **soft** ] [ **in** | **out** ]

Parameter Description	Parameter	Description
	<i>vrf-name</i>	VRF name
	<i>peer-group-name</i>	Peer group name
	<b>in</b>	Resets received route information.
	<b>out</b>	Resets allocated route information.
	<b>soft</b>	Soft-resets received and sent route information.
	<b>soft in</b>	Soft-resets received route information.
	<b>soft out</b>	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** The following example resets sessions with all members in the peer group.

**Examples** Ruijie# clear bgp ipv6 unicast peer-group my-group in

<b>Configuration</b> <b>Examples</b>	Command	Description
	<b>clear ip bgp</b>	Resets BGP sessions.
	<b>show ip bgp</b>	Displays BGP route entries.

**Platform** -  
**Description**

## 5.64 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 ipv6 unicast** [ *vrf vrf-name* ] **table-map**

### Parameter Description

Parameter	Description
<i>vrf-name</i>	VRF name

### Defaults

-

### Command Mode

Privileged EXEC mode

### Usage Guide

-

### Configuration Examples

### Configuration Examples

Command	Description
<b>clear ip bgp</b>	Resets BGP's IPv4 unicast address families.

### Platform

-

### Description

## 5.65 clear bgp l2vpn evpn

Use this command to reset BGP EVPN address families.

**clear bgp l2vpn evpn** { \* | *as-number* | *peer-address* } [ **soft** ] [ **in** | **out** ]

### Parameter Description

Parameter	Description
*	Resets all peer group sessions under address families.
<i>as-number</i>	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.
<i>peer-address</i>	Resets sessions with the specified peer.
<b>in</b>	Resets received route information.
<b>out</b>	Resets allocated route information.

<b>soft</b>	Soft-resets received and sent route information.
<b>soft in</b>	Soft-resets received route information.
<b>soft out</b>	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
	<b>clear bgp ipv4 unicast</b>	Resets BGP's IPv4 unicast address families.

**Platform** -

**Description**

## 5.66 clear bgp l2vpn evpn dampening

Use this command to clear flap information and disable route dampening.

**clear bgp l2vpn evpn dampening**

Parameter Description	Parameter	Description
	N/A	N/A

**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** The following example clears flap information and disables route dampening.

**Examples** Ruijie# clear bgp l2vpn evpn dampening

**Platform** N/A

**Description**

## 5.67 clear bgp l2vpn evpn external

Use this command to reset all EBGp connection of BGP EVPN address families.

**clear bgp l2vpn evpn external** [ **soft** ] [ **in** | **out** ]

Parameter Description	Parameter	Description
	<b>in</b>	Resets received route information.
	<b>out</b>	Resets allocated route information.
	<b>soft</b>	Soft-resets received and sent route information.
	<b>soft in</b>	Soft-resets received route information.
	<b>soft out</b>	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** The following example resets all EBGp connection of L2VPN EVPN address families.

**Examples** Ruijie# clear bgp l2vpn evpn external in

**Platform Description** N/A



## 5.68 clear bgp l2vpn evpn flap-statistics

Use this command to clear BGP EVPN address families' route flap statistics.

**clear bgp l2vpn evpn flap-statistics**

### Parameter Description

Parameter	Description
N/A	N/A

### 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

The following example clears L2VPN EVPN address families' route flap statistics.

### Examples

```
Ruijie# clear bgp l2vpn evpn flap-statistics
```

### Platform

N/A

### Description

## 5.69 clear bgp l2vpn evpn peer-group

Use this command to reset sessions of all members in the peer group.

**clear bgp l2vpn evpn peer-group** *peer-group-name* [ **soft** ] [ **in** | **out** ]

### Parameter Description

Parameter	Description
<i>peer-group-name</i>	Peer group name
<b>in</b>	Resets received route information.
<b>out</b>	Resets allocated route information.
<b>soft</b>	Soft-resets received and sent route information.
<b>soft in</b>	Soft-resets received route information.
<b>soft out</b>	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** The following example displays that the L2VPN EVPN address family soft-resets received route information of all members in the peer group my-group.

**Examples**

```
Ruijie# clear bgp l2vpn evpn peer-group my-group in
```

**Platform** N/A

**Description**

## 5.70 clear ip bgp

Use this command to reset the BGP session.

**clear ip bgp [ vrf *vrf-name* ] { \* | *as-number* | *peer-address* } [ **soft** ] [ **in** | **out** ]**

**Parameter  
Description**

Parameter	Description
<i>vrf-name</i>	VRF name.
*	Resets all the current BGP sessions and the OVERFLOW status of BGP ipv4 unicast address family.
<i>address</i>	Resets the BGP session with the specified peer.
<i>as number</i>	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.
<b>in</b>	resets received route information.
<b>out</b>	resets allocated route information.
<b>soft</b>	Soft-reset all routing information received/sent from/to the specified peer
<b>soft in</b>	Soft-reset the received routing information.
<b>soft out</b>	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** The following example resets the BGP session.

**Examples**

```
Ruijie# clear bgp ipv4 unicast *
```

**Related  
Commands**

Command	Description
<b>neighbor soft-reconfiguration inbound</b>	(Optional) Restarts the BGP session and reserves the unchanged route information sent by the BGP peer (group).
<b>show ip bgp</b>	Displays the BGP route entry.

**Platform**

**Description**

None

## 5.71 clear ip bgp dampening

Use this command to clear the dampening information and disable route dampening.

**clear ip bgp [ vrf *vrf-name* ] dampening [ *ip-address* [ *mask* ] ]**

**Parameter  
Description**

Parameter	Description
<i>vrf-name</i>	VRF name
<i>address</i>	IP address
<i>mask</i>	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**

Command	Description
---------	-------------

<b>Commands</b>	<b>show ip bgp dampening dampened-paths</b>	Displays the suppressed routing information.
	<b>bgp dampening</b>	Enables the route dampening function and sets dampening parameters.

**Platform**

**Description** None

## 5.72 clear ip bgp external

Use this command to reset all EBGp connections.

**clear ip bgp [ vrf *vrf-name* ] external [ soft ] [ in | out ]**

<b>Parameter</b> <b>Description</b>	<b>Parameter</b>	<b>Description</b>
	<i>vrf-name</i>	VRF name.
	<b>in</b>	Resets received route information.
	<b>out</b>	Resets allocated route information.
	<b>soft in</b>	Soft-resets the received routing information.
	<b>soft out</b>	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** The following example resets all EBGp connections.

**Examples** Ruijie# clear ip bgp external in

<b>Related</b> <b>Commands</b>	<b>Command</b>	<b>Description</b>
	<b>clear ip bgp</b>	Resets the BGP session.
	<b>show ip bgp neighbors</b>	Displays the neighbor information.

**Platform**

**Description** None

## 5.73 clear ip bgp flap-statistics

Use this command to clear the routes vibration statistics of the IPv4 unicast address family.

**clear ip bgp [ vrf *vrf-name* ] flap-statistics [ ip-address [ mask ] ]**

Parameter	Parameter	Description
	<i>vrf-name</i>	VRF name.
	<i>address</i>	IP address
	<i>Mask</i>	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 <b>clear ip bgp dampening</b> command.	
Configuration	The following example clears the routes vibration statistics of the IPv4 unicast address family.	
Examples	<pre>Ruijie# clear ip bgp flap-statistics</pre>	
Related Commands	Command	Description
	<b>bgp dampening</b>	Enables the route dampening function and sets dampening parameters.
	<b>show ip bgp</b>	Displays the BGP route entry.
Platform		
Description	None	

## 5.74 clear ip bgp peer-group

Use this command to reset the session with all members in the peer group.

**clear ip bgp [ vrf *vrf-name* ] peer-group *peer-group-name* [ soft ] [ in | out ]**

Parameter Description	Parameter	Description
	<i>vrf-name</i>	VRF name.
	<i>peer-group-name</i>	Name of the peer group
	<b>in</b>	Resets received route information.
	<b>out</b>	Resets allocated route information.
	<b>soft</b>	Soft-resets all routing information received/sent from/to the specified peer
	<b>soft in</b>	Soft-resets the received routing information.
	<b>soft out</b>	Soft-resets the distributed routing information.
Defaults	N/A	
Command	Privileged EXEC mode	

**Mode****Usage****Guide**

This command resets the BGP session with all members in the peer group.

**Configuration**

The following example resets the session with all members in the peer group.

**Examples**

```
Ruijie# clear ip bgp peer-group my-group in
```

**Related****Commands**

Command	Description
<b>clear ip bgp</b>	Resets the BGP session.
<b>show ip bgp</b>	Displays the BGP route entry.

**Platform****Description**

None

## 5.75 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 [vrf *vrf-name*] table-map**

**Parameter****Description**

Parameter	Description
<i>vrf-name</i>	vrf name

**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
<b>clear ip bgp</b>	Resets the BGP session.
<b>show ip bgp</b>	Displays the BGP route entry.

**Platform****Description**

None

## 5.76 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	Parameter	Description
Description	N/A	N/A

**Defaults** This function is disabled by default.

**Command Mode** BGP configuration mode, BGP IPv4/IPv6 address family configuration mode, BGP IPv4 VRF configuration mode, BGP IPv6 VRF 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
	<b>network</b>	Configures routes to be advertised.
	<b>redistribute</b>	Redistributes routes of other protocol.

**Platform**

**Description** None

## 5.77 default-metric


Use this command to set the metric for route redistribution. Use the **no** or **default** form of this command to restore the default setting.

**default-metric *number***

**no default-metric**

**default default-metric**

Parameter	Parameter	Description
-----------	-----------	-------------

Description	<i>number</i>	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/ IPv6 VRF address family configuration mode or BGP Scope configuration mode.					
Usage Guide	<p>This command sets the metric of routes to be redistributed for integrity.</p> <hr/> <p> The metric set by the command cannot cover that set by the <b>redistribute metric</b> command. The value is 0 when the default metric applies to redistributed connected routes.</p> <hr/>					
Configuration Examples	<p>The following example sets the metric for route redistribution.</p> <pre>Ruijie(config-router)# default-metric 45</pre>					
Related Commands	<table><tr><th>Command</th><th>Description</th></tr><tr><td><b>redistribute</b></td><td>Redistributes routes of other protocol.</td></tr></table>	Command	Description	<b>redistribute</b>	Redistributes routes of other protocol.	
Command	Description					
<b>redistribute</b>	Redistributes routes of other protocol.					
Platform Description	None					

## 5.78 distance bgp

Use this command to set different management distances for different types of BGP routes. Use the **no** or **default** form of this command to restore the default setting.

**distance bgp *external-distance internal-distance local-distance***

**no distance bgp**

**default distance bgp**

### Parameter Description

Parameter	Description
<i>external-distance</i>	Route management distance learned from EBGp peers, in the range from 1 to 255
<i>internal-distance</i>	Route management distance learned from IBGP peers, in the range from 1 to 255
<i>local-distance</i>	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

The parameter defaults are as follows:

**Defaults**

*external-distance* - 20  
*internal-distance* - 200



*local-distance - 200*

**Command****Mode**

BGP configuration mode or BGP Scope configuration mode.

It is not recommended to change the management distance of the BGP route. If it is necessary, observe the following points:

**Usage**

- 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.

**Guide****Configuration**

The following example sets different management distances for different types of BGP routes.

**Examples**

```
Ruijie(config-router)# distance bgp 20 20 200
```

**Related****Commands**

Command	Description
<b>neighbor soft-reconfiguration inbound</b>	Restarts the BGP session and reserves the unchanged route information sent by the BGP peer (group).
<b>show ip bgp</b>	Displays the BGP route entry.

**Platform****Description**

None

## 5.79 evpn

Use this command to enter EVPN configuration mode. Use the **no** or **restore** form of this command to restore the default setting.

**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**

Use this command to enter EVPN configuration mode. Use the **exit** command to exit the EVPN configuration mode

**Guide**

**Configuration** The following example enters EVPN configuration mode.

**Examples** Ruijie(config)# evpn

**Platform**

**Description** N/A

## 5.80 exit-address-family

Use this command to exit BGP address-family configuration mode.

### exit-address-family

Parameter	Parameter	Description
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** The following example exits the BGP address-family configuration mode.

**Examples** Ruijie(config-router-af)#exit-address-family

Related	Command	Description
Commands	address-family ipv4	Enters IPv4 address family configuration mode.

**Platform**

**Description** None

## 5.81 maximum-paths ebgp

Use this command to configure the number of cost-equal paths for the EBGp multipathing load balancing function. Use the **no** or **default** form of this command to restore the default setting.

**maximum-paths ebgp** *number*

**no maximum-paths ebgp**

**default maximum-paths ebgp**

Parameter	Parameter	Description
Description	<i>number</i>	Maximum number of cost-equal paths

	The parameter value ranges from 1 to 32. When the parameter is set to 1, the EBGp multipathing load balancing function is disabled.
--	---

**Defaults** EBGp multipathing load balancing is disabled by default.

**Command Mode** BGP configuration mode/ BGP IPv4 unicast address configuration mode/ BGP IPv6 unicast address-family configuration mode/ BGP scope global configuration mode

**Usage Guide** When EBGp ECMP must be supported, run the maximum-paths ebgp command to configure the maximum number of cost-equal paths. The command also applies to EBGp ECMP in the confederation.

**Configuration Examples** The following example configures the number of cost-equal paths for the EBGp multipathing load balancing function.

```
Ruijie(config)# router bgp 65530
Ruijie(config-router)# maximum-paths ebgp 2
```

**Related Commands**

Command	Description
<b>router bgp</b>	Enables BGP.
<b>show ip bgp</b>	Displays BGP routing entries.

**Platform Description** N/A

## 5.82 maximum-paths ibgp

Use this command to configure the number of cost-equal paths for the IBGP multipathing load balancing function. Use the **no** or **default** form of this command to disable the IBGP multipathing load balancing function.

**maximum-paths ibgp** *number*

**no maximum-paths ibgp**

**default maximum-paths ibgp**

**Parameter Description**

Parameter	Description
<i>number</i>	Maximum number of cost-equal paths The parameter value ranges from 1 to 32. When the parameter is set to 1, the IBGP multipathing load balancing function is disabled.

**Defaults** This function is disabled by default.

**Command Mode** BGP configuration mode, BGP IPv4/ IPv6 Unicast address family configuration mode or BGP Scope Global configuration mode

**Usage Guide** When IBGP ECMP must be supported, run the maximum-paths ibgp command to configure the maximum number of cost-equal paths.

**Configuration Examples** The following example configures the number of cost-equal paths for the IBGP multipathing load balancing function.

```
Ruijie(config)# router bgp 65530
Ruijie(config-router)# maximum-paths ibgp 2
```

**Related Commands**

Command	Description
<b>router bgp</b>	Enables BGP.
<b>show ip bgp</b>	Displays BGP routing entries.

**Platform** N/A

**Description**

## 5.83 maximum-prefix

Use this command to limit the maximum number of prefixes in the routing database in the address family. Use the **no** or **default** form of this command to restore the default setting.

**maximum-prefix** *maximum*

**no maximum-prefix** [*maximum*]

**default maximum-prefix** [ *maximum* ]

**Parameter Description**

Parameter	Description
<i>maximum</i>	The maximum number of prefixes in the routing database in the address family, in the range from 1 to 4294967295
no	Restores the default maximum number.

**Defaults**

The default maximum numbers of prefixes in the routing database vary with address families. The default number in the IPv4 VRF, IPv6 VRF, IPv4 Multicast, IPv6 Multicast, IPv4 MDT address family is 10000; The default number in the other address family is 4294967295.

**Command Mode**


BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF configuration mode, BGPL2VPN 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.

 Maximum-prefix will not filter the routing information generated by the network and aggregate commands.

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.

The following example sets the maximum number of prefixes in the BGP routing database in the ipv4 multicast address family.

#### Configuration Examples

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family ipv4 multicast
Ruijie(config-router-af)# maximum-prefix 65535
```

#### Related Commands

Command	Description
<b>clear bgp all</b>	Resets BGP's all address families.
<b>clear bgp ipv4 mdt</b>	Resets BGP's ipv4 mdt address families.
<b>clear bgp ipv4 unicast</b>	Resets BGP's ipv4 unicast address families.
<b>clear bgp ipv6 unicast</b>	Resets BGP's ipv6 unicast address families.
<b>clear bgp vpnv4 unicast</b>	Resets BGP's vpnv4 unicast address families.
<b>show bgp all summary</b>	Displays summary of BGP's all address families.
<b>show bgp ipv4 mdt summary</b>	Displays summary of BGP's ipv4 mdt address families.
<b>show bgp ipv4 unicast summary</b>	Displays summary of BGP's ipv4 unicast address families.
<b>show bgp ipv6 unicast summary</b>	Displays summary of BGP's ipv6 unicast address families.
<b>show bgp vpnv4 summary</b>	Displays summary of BGP's vpnv4 unicast address families.

#### Platform

Description N/A

## 5.84 neighbor activate

Use this command to activate the neighbor or peer group in the current address mode. Use the **no** or **default** form of this command to disable this function.

**neighbor {*peer-address* | *peer-group-name*} activate**

**no neighbor {*peer-address* | *peer-group-name*} activate**

**default neighbor { *peer-address* | *peer-group-name* } activate**

### Parameter Description

Parameter	Description
<i>peer-address</i>	IP address of the peer, IPv4 address or IPv6 address
<i>peer-group-name</i>	Name of the peer group of up to 32 characters

### Defaults

This function is enabled in IPv4 address family mode by default.

### Command

#### Mode

BGP configuration mode, BGP IPv4/ IPv6 Unicast 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

--

### Related Commands

Command	Description
<b>router bgp</b>	Enables the BGP protocol.
<b>neighbor remote-as</b>	Configures the BGP peer.

### Platform

#### Description

None

## 5.85 neighbor advertisement-interval

Use this command to set the time interval to send the BGP route update message. Use the **no** or **default** form of this command to restore the default setting.

**neighbor {*peer-address* | *peer-group-name*} advertisement-interval *seconds***

**no neighbor {*peer-address* | *peer-group-name*} advertisement-interval**

**default neighbor { *peer-address* | *peer-group-name* } advertisement-interval**

### Parameter Description

Parameter	Description
<i>peer address</i>	IP address of the peer

<i>peer-group-name</i>	Name of the peer group of up to 32 characters
<i>seconds</i>	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 Mode**

BGP configuration mode, BGP IPv4/ IPv6 VRF address family configuration mode or 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
	<b>router bgp</b>	Enables the BGP protocol.
	<b>neighbor remote-as</b>	Configures the BGP peer.

**Platform Description**

None

## 5.86 neighbor allowas-in

Use this command to allow the PE to receive messages with the same AS number as itself. Use the **no** or **default** form of this command to restore the default setting.

**neighbor {*peer-address* | *peer-group-name*} allowas-in *number***

**no neighbor {*peer-address* | *peer-group-name*} allowas-in**

**default neighbor { *peer-address* | *peer-group-name* } allowas-in**

Parameter Description	Parameter	Description
	<i>peer address</i>	IP address of the peer
	<i>peer-group-name</i>	Name of the peer group of up to 32 characters
	<i>number</i>	Number of the AS number duplication in the range from 1 to 10, 3 by default

**Defaults**

This function is disabled by default.

**Command**

BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP

**Mode** IPv4/IPv6 VRF address family configuration mode, BGPL2VPN 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  
Examples**

The following example allows the PE to receive messages with the same AS number as itself.

```
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
<b>router bgp</b>	Enables the BGP protocol.
<b>neighbor remote-as</b>	Configures the BGP peer.

**Platform**

**Description** None

## 5.87 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 { *peer-address* | *peer-group-name* } as-origination-interval *seconds***

**no neighbor { *peer-address* | *peer-group-name* } as-origination-interval**

**default neighbor { *peer-address* | *peer-group-name* } as-origination-interval**

**Parameter  
Description**

Parameter	Description
<i>peer address</i>	IP address of the peer.
<i>peer-group-name</i>	Name of the peer group, containing up to 32 characters.
<i>seconds</i>	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 global configuration mode.



**Usage** 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

## 5.88 neighbor as-override

Use this command to allow the PE to override the AS number of a site. Use the **no** or **default** form of this command to restore the default setting.

**neighbor {peer-address | peer-group-name} as-override**

**no neighbor {peer-address | peer-group-name} as-override**

**default neighbor { peer-address | peer-group-name } as-override**

**Parameter  
Description**

Parameter	Description
<i>peer address</i>	IP address of the peer
<i>peer-group-name</i>	Name of the peer group of up to 32 characters

**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 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
<b>router bgp</b>	Enables the BGP protocol.
<b>neighbor remote-as</b>	Configures the BGP peer.

**Platform****Description**

None

## 5.89 neighbor default-originate

Use this command to allow the BGP speaker to advertise the default route to the peer (group). Use the **no** or **default** form of this command to restore the default setting.

**neighbor** {*peer-address* | *peer-group-name*} **default-originate** [**route-map** *map-tag*]

**no neighbor** {*peer-address* | *peer-group-name*} **default-originate** [**route-map** *map-tag*]

**default neighbor** { *peer-address* | *peer-group-name* } **default-originate** [ **route-map** *map-tag* ]

**Parameter****Description**

Parameter	Description
<i>peer address</i>	IP address of the peer
<i>peer-group-name</i>	Name of the peer group of up to 32 characters
<i>map-tag</i>	Name of the route-map of up to 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, or BGP Scope configuration mode

**Usage****Guide**

This command requires redistributing the default route only when the default route exists locally. 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
<b>router bgp</b>	Enables the BGP protocol.
<b>neighbor remote-as</b>	Configures the BGP peer.

**Platform****Description** None

## 5.90 neighbor description

Use this command to set a descriptive sentence for the specified peer (group). Use the **no** or **default** form of this command to restore the default setting.

**neighbor** {*peer-address* | *peer-group-name*} **description** *text*

**no neighbor** {*peer-address* | *peer-group-name*} **description**

**default neighbor** { *peer-address* | *peer-group-name* } **description**

	Parameter	Description
<b>Parameter</b> <b>Description</b>	<i>peer address</i>	IP address of the peer
	<i>peer-group-name</i>	Name of the peer group of up to 32 characters
	<i>text</i>	Descriptive text of the peer (group) of up to 80 characters

**Defaults** This function is disabled by default.

**Command Mode** BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode and BGP IPv4/IPv6 VRF address family configuration mode or 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
```

<b>Related Commands</b>	Command	Description
	<b>router bgp</b>	Enables the BGP protocol.
	<b>neighbor remote-as</b>	Configures the BGP peer.

**Platform****Description** None

## 5.91 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** or **default** form of this command to restore the default setting.

**neighbor** { *peer-address* | *peer-group-name* } **distribute-list** { *access-list-number* } { **in** | **out** }

**no neighbor** { *peer-address* | *peer-group-name* } **distribute-list** { *access-list-number* } { **in** | **out** }

**default neighbor** { *peer-address* | *peer-group-name* } **distribute-list** { *access-list-number* | *access-list-name* } { **in** | **out** }

Parameter Description	Parameter	Description
	<i>peer address</i>	IP address of the peer
	<i>peer-group-name</i>	Name of the peer group of up to 32 characters
	<i>access-list-number</i>	ACL number
	<b>in</b>	Specifies the ACL for filtering the incoming routes.
	<b>out</b>	Specifies the ACL for filtering the outgoing routes.

**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.

**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
	<b>router bgp</b>	Enables the BGP protocol.
	<b>neighbor remote-as</b>	Configures the BGP peer.
	<b>ip access-list</b>	Creates a standard IP ACL or extended IP ACL.

**Platform**

**Description** None

## 5.92 neighbor ebgp-multihop

Use this command to allow establishing BGP connection between EBGp peers that are not directly connected. Use the **no** or **default** form of this command to restore the default setting.

**neighbor** {*peer-address* | *peer-group-name*} **ebgp-multihop** [*ttl*]

**no neighbor** {*peer-address* | *peer-group-name*} **ebgp-multihop** [*ttl*]

**default neighbor** { *peer-address* | *peer-group-name* } **ebgp-multihop** [ *ttl* ]

**Parameter****Description**

Parameter	Description
<i>peer address</i>	IP address of the peer
<i>peer-group-name</i>	Name of the peer group of up to 32 characters
<i>ttl</i>	Maximum hops in the range 1 to 255

**Defaults**

The BGP connection is allowed between EBGp peers connected with each other directly by default.

If "ebgp-multihop" is followed by no parameter, the ttl is 255.

**Command Mode**

BGP configuration mode, BGP IPv4/IPv6 VRF address family configuration mode or 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
<b>router bgp</b>	Enables the BGP protocol.
<b>neighbor remote-as</b>	Configures the BGP peer.

**Platform****Description**

None

## 5.93 neighbor filter-list

Use this command to enable route filtering when sending/receiving routing information to/from BGP peers. Use the **no** or **default** form of this command to restore the default setting.

**neighbor** { *peer-address* | *peer-group-name* } **filter-list** *access-list-number* { **in** | **out** }

**no neighbor** { *peer-address* | *peer-group-name* } **filter-list** *access-list-number* { **in** | **out** }

**default neighbor** { *peer-address* | *peer-group-name* } **filter-list** *access-list-number* { **in** | **out** }

**Parameter****Description**

Parameter	Description
<i>peer address</i>	IP address of the peer, IPv4 address or IPv6 address

<i>peer-group-name</i>	Name of the peer group of up to 32 characters
<i>access-list-number</i>	ACL number
<b>in</b>	Applies as-path list on the received routing information.
<b>out</b>	Applies as-path list on the distributed routing information.

**Defaults** The 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 or 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
<b>router bgp</b>	Enables the BGP protocol.
<b>neighbor remote-as</b>	Configures the BGP peer.
<b>ip as-path access-list</b>	Creates an AS_PATH list.
<b>match as-path</b>	Matches the AS_PATH list.

**Platform**

**Description** None

## 5.94 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** { *peer-address* | *peer-group-name* } **fall-over bfd**

**no neighbor** { *peer-address* | *peer-group-name* } **fall-over bfd**

**default neighbor** { *peer-address* | *peer-group-name* } **fall-over bfd**

**Parameter Description**

Parameter	Description
<i>peer address</i>	IPv4 or IPv6 address of the peer.
<i>peer-group-name</i>	Name of the peer group, containing up to 32 characters.

**Defaults** BFD correlation is disabled by default.

**Command Mode** BGP configuration mode / IPv4 VRF address family configuration mode/ IPv6 VRF address family configuration mode/ 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
<b>router bgp</b>	Enables the BGP protocol.
<b>neighbor remote-as</b>	Configures the BGP peer.

**Platform**

**Description** None

## 5.95 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** or **default** form of this command to restore the default setting.

**neighbor {peer-address | peer-group-name} local-as as-number [no-prepend [replace-as [dual-as]]]**

**no neighbor {peer-address | peer-group-name} local-as**

**Parameter Description**

Parameter	Description
<i>peer address</i>	IP address of the peer, IPv4 address or IPv6 address
<i>peer-group-name</i>	Name of the peer group of up to 32 characters
<i>as-number</i>	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.
<b>no-prepend</b>	The AS-PATH of the routing information received from the peer does not depend on the Local AS. This option is disabled by default.
<b>replace-as</b>	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.

<b>dual-as</b>	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 option 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, BGP IPv4/IPv6 VRF configuration mode or 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
<b>router bgp</b>	Enables the BGP protocol.
<b>neighbor remote-as</b>	Configures the BGP peer.

**Platform**

**Description** N/A

## 5.96 neighbor maximum-prefix

Use this command to limit the number of prefixes received from the specified BGP peer. Use the **no** or **default** form of this command to restore the default setting.

**neighbor** {*peer-address* | *peer-group-name*} **maximum-prefix** *maximum* [*threshold*] [**warning-only**]

**no neighbor** {*peer-address* | *peer-group-name*} **maximum-prefix** *maximum*

**default neighbor** {*peer-address* | *peer-group-name*} **maximum-prefix** *maximum*

**Parameter Description**

Parameter	Description
<i>peer-address</i>	IP address of the peer, IPv4 or IPv6 address
<i>peer-group-name</i>	Name of the peer group of up to 32 characters
<i>maximum</i>	Upper limit of the number of the received route entries
<i>threshold</i>	Percentage of the maximum when alarming.



<b>warning-only</b>	Does not terminate the BGP connection when the route entries reach the upper limit but produce a log entry.
---------------------	---

**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, BGPL2VPN EVPN address family 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. 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
	<b>router bgp</b>	Enables the BGP protocol.
	<b>neighbor remote-as</b>	Configures the BGP peer.

**Platform Description** None

## 5.97 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** or **default** form of this command to restore the default setting.

**neighbor** {*peer-address* | *peer-group-name*} **next-hop-self**

**no neighbor** {*peer-address* | *peer-group-name*} **next-hop-self**

**default neighbor** { *peer-address* | *peer-group-name* } **next-hop-self**

Parameter Description	Parameter	Description
	<i>peer-address</i>	IP address of the peer, IPv4 or IPv6 address
	<i>peer-group-name</i>	Name of the peer group of up to 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.

**Usage** 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.

**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 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
<b>router bgp</b>	Enables the BGP protocol.
<b>neighbor remote-as</b>	Configures the BGP peer.

**Platform**

**Description** None

## 5.98 neighbor next-hop-unchanged

Use this command to maintain the next-hop when sending routes to the peer(group). Use the **no** or **default** form of this command to restore the default setting.

**neighbor** {*peer-address* | *peer-group-name*} **next-hop-unchanged**

**no neighbor** {*peer-address* | *peer-group-name*} **next-hop-unchanged**

**default neighbor** { *peer-address* | *peer-group-name* } **next-hop-unchanged**

**Parameter Description**

Parameter	Description
<i>peer-address</i>	IP address of the peer, IPv4 or IPv6 address
<i>peer-group-name</i>	Name of the peer group of up to 32 characters
<b>next-hop-unchanged</b>	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 IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode, BGPL2VPN EVPN address family 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.

**Configuration****Examples**

--

**Related  
Commands**

Command	Description
<b>router bgp</b>	Enables the BGP protocol.
<b>neighbor remote-as</b>	Configures the BGP peer.

**Platform**

**Description** None

## 5.99 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** or **default** form of this command to restore the default setting.

**neighbor** {*peer-address* | *peer-group-name*} **password** [**0** | **7**] *string*

**no neighbor** {*peer-address* | *peer-group-name*} **password**

**default neighbor** { *peer-address* | *peer-group-name* } **password**

**Parameter  
Description**

Parameter	Description
<i>peer-address</i>	IP address of the peer, IPv4 or IPv6 address
<i>peer-group-name</i>	Name of the peer group of up to 32 characters
<b>0</b>	Displays the password with encryption.
<b>7</b>	Displays the password without encryption.
<i>string</i>	Password for MD5 authentication in the range from up to 80 characters

**Defaults** The 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 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
<b>router bgp</b>	Enables the BGP protocol
<b>neighbor remote-as</b>	Configures the BGP peer.

### Platform

**Description** None

## 5.100 neighbor peer-group (creating)

Use this command to create a BGP peer group. Use the **no** or **default** form of this command to restore the default setting.

**neighbor** *peer-group-name* **peer-group**

**no neighbor** *peer-group-name* **peer-group**

**default neighbor** *peer-group-name* **peer-group**

Parameter	Parameter	Description
<b>Description</b>	<i>peer-group-name</i>	Name of the peer group of up to 32 characters

**Defaults** No BGP peer group is created.

**Command Mode** BGP configuration mode, BGP IPv4/IPv6 VRF configuration mode or 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
<b>router bgp</b>	Enables the BGP protocol.
<b>neighbor remote-as</b>	Configures the BGP peer.
<b>neighbor peer-group (assigning members)</b>	Configures the specified peer as the member of the BGP peer group.

<b>show ip bgp peer-group</b>	Displays the information of the BGP peer.
-----------------------------------	---

**Platform****Description** None

## 5.101 neighbor peer-group (assigning members)

Use this command to configure the specified peer as a member of the BGP peer group. Use the **no** or **default** form of this command to restore the default setting.

**neighbor** *peer-address* **peer-group** *peer-group-name*

**no neighbor** *peer-address* **peer-group** *peer-group-name*

**default neighbor** *peer-address* **peer-group** *peer-group-name*

Parameter Description	Parameter	Description
	<i>peer-address</i>	IP address of the peer, IPv4 or IPv6 address
	<i>peer-group-name</i>	Name of the peer group of up to 32 characters


**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, BGPL2VPN 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
<b>router bgp</b>	Enables the BGP protocol.

<b>neighbor remote-as</b>	Configures the BGP peer.
<b>neighbor peer-group (creating)</b>	Creates the BGP peer group.
<b>show ip bgp peer-group</b>	Displays the information of the BGP peer.

**Platform**

**Description**      None

## 5.102 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** or **default** form of this command to restore the default setting.

**neighbor {peer-address | peer-group-name} prefix-list prefix-list-name {in | out}**

**no neighbor {peer-address | peer-group-name} prefix-list prefix-list-name {in | out}**

**default neighbor { peer-address | peer-group-name } prefix-list prefix-list-name { in | out }**

Parameter Description	Parameter	Description
	<i>peer address</i>	IP address of the peer, IPv4 or IPv6 address
	<i>peer-group-name</i>	Name of the peer group of up to 32 characters
	<i>prefix-lis-name</i>	Name of the prefix-list of up to 32 characters
	<b>in</b>	Applies the prefix list to the received routes.
	<b>out</b>	Applies the prefix list to the redistributed routes.

**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, BGPL2VPN EVPN address family configuration mode.

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.

**Usage Guide**      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
	<b>router bgp</b>	Enables the BGP protocol.
	<b>neighbor remote-as</b>	Configures the BGP peer.
	<b>ip prefix-list</b>	Creates the prefix lists.

**Platform****Description** None

## 5.103 neighbor remote-as

Use this command to configure the BGP peer (group). Use the **no** or **default** form of this command to restore the default setting.

**neighbor { *peer-address* | *peer-group-name* } remote-as *as-number***

**no neighbor { *peer-address* | *peer-group-name* } remote-as**

**default neighbor { *peer-address* | *peer-group-name* } remote-as**

Parameter Description	Parameter	Description
	<i>peer-address</i>	IP address of the peer, IPv4 or IPv6 address
	<i>peer-group-name</i>	Name of the peer group of up to 32 characters
	<i>as-number</i>	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.

**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, BGPL2VPN 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.

**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
	<b>router bgp</b>	Enables the BGP protocol.

**Platform****Description** None

## 5.104 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** or **default** form of this command to restore the default setting.

**neighbor {*peer-address* | *peer-group-name*} remove-private-as**

**no neighbor {*peer-address* | *peer-group-name*} remove-private-as**

**default neighbor { *peer-address* | *peer-group-name* } remove-private-as**

**Parameter  
Description**

Parameter	Description
<i>peer-address</i>	IP address of the peer, IPv4 or IPv6 address
<i>peer-group-name</i>	Name of the peer group of up to 32 characters

**Defaults**

This function is disabled by default.

**Command  
Mode**

BGP configuration mode, BGP IPv4/IPv6 address family configuration mode, or BGP IPv4 VRF configuration mode.

**Usage  
Guide**

This command takes effect only on EBGp peers.

If the AS path contains the private AS number that is the AS number of the EBGp peer to be sent, the AS number is not deleted.

Private AS number range: 64512 - 65535

**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
<b>router bgp</b>	Enables the BGP protocol.
<b>neighbor remote-as</b>	Configures the BGP peer.

**Platform****Description** None

## 5.105 neighbor route-map

Use this command to enable route match for the received/sent routes. Use the **no** or **default** form of this command to disable this function.

**neighbor { *peer-address* | *peer-group-name* } route-map *map-tag* {in | out}**



**no neighbor { *peer-address* / *peer-group-name* } route-map *map-tag* {in | out}**

**default neighbor { *peer-address* | *peer-group-name* } route-map *map-tag* { in | out }**

**Parameter  
Description**

Parameter	Description
<i>peer-address</i>	IP address of the peer, IPv4 or IPv6 address
<i>peer-group-name</i>	Name of the peer group of up to 32 characters
<i>map-tag</i>	Name of the match rule
<b>in</b>	Applies the rule to the incoming routes.
<b>out</b>	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, BGPL2VPN 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
<b>neighbor soft-reconfiguration inbound</b>	Stores the routing information sent from the BGP peer.
<b>show ip bgp</b>	Displays the BGP route entry.

**Platform**

**Description** None

## 5.106 neighbor route-reflector-client

Use this command to configure the local device as the route reflector and specifies its client. Use the **no** or **default** form of this command to restore the default setting.

**neighbor *peer-address* route-reflector-client**

**no neighbor *peer-address* route-reflector-client**

**default neighbor { *peer-address* | *peer-group-name* } route-reflector-client**

**Parameter  
Description**

Parameter	Description
<i>peer-address</i>	IP address of the peer, IPv4 or IPv6 address
<i>peer-group-name</i>	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, BGPL2VPN EVPN address family configuration mode.

**Usage** 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.

**Guide** 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
<b>router bgp</b>	Enables the BGP protocol.
<b>neighbor remote-as</b>	Configures the BGP peer.
<b>bgp cluster-id</b>	Configures the cluster ID of the route reflectors.
<b>bgp client-to-client reflection</b>	Enables the route reflection between clients

**Platform**

**Description** None

## 5.107 neighbor send-community

Use this command to transmit community attributes to the specified BGP neighbor. Use the **no** or **default** form of this command to restore the default setting.

**neighbor** {*peer-address* | *peer-group-name*} **send-community** [**both** | **standard** | **extended**]

**no neighbor** {*peer-address* | *peer-group-name*} **send-community** [**both** | **standard** | **extended**]

**default neighbor** { *peer-address* | *peer-group-name* } **send-community** [ **both** | **standard** | **extended** ]

**Parameter Description**

Parameter	Description
<i>peer-address</i>	IP address of the peer, IPv4 or IPv6 address
<i>peer-group-name</i>	Name of the peer group of up to 32 characters
<b>both</b>	Transmits both standard and extended communities.
<b>standard</b>	Transmits the standard community only.
<b>extended</b>	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, BGPL2VPN 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
<b>router bgp</b>	Enables the BGP protocol.
<b>neighbor remote-as</b>	Configures the BGP peer.
<b>ip community-list</b>	Creates the community list.

**Platform**

**Description** None

## 5.108 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 setting.

**neighbor {peer-address | peer-group-name} shutdown**

**no neighbor {peer-address | peer-group-name} shutdown**

**default neighbor { peer-address | peer-group-name } shutdown**

**Parameter Description**

Parameter	Description
<i>peer-address</i>	IP address of the peer, IPv4 or IPv6 address
<i>peer-group-name</i>	Name of the peer group of up to 32 characters

**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 setting will overwrite the setting 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
<b>router bgp</b>	Enables the BGP protocol.
<b>neighbor remote-as</b>	Configures the BGP peer.
<b>show ip bgp summary</b>	Displays the BGP connection status.

**Platform**

**Description** None

## 5.109 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 setting.

**neighbor {peer-address | peer-group-name} soft-reconfiguration inbound**

**no neighbor {peer-address | peer-group-name} soft-reconfiguration inbound**

**default neighbor { peer-address | peer-group-name } soft-reconfiguration inbound**

**Parameter Description**

Parameter	Description
<i>peer-address</i>	IP address of the peer, IPv4 or IPv6 address
<i>peer-group-name</i>	Name of the peer group of up to 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, BGPL2VPN 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 setting will overwrite the setting 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
<b>router bgp</b>	Enables the BGP protocol.
<b>neighbor remote-as</b>	Configures the BGP peer.
<b>show ip bgp neighbors</b>	Displays the information of the BGP peer.
<b>clear ip bgp</b>	Resets the BGP peer session.

### Platform

**Description**          None

## 5.110 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 setting.

**neighbor** {*peer-address* | *peer-group-name*} **soo** *soo-value*

**no neighbor** {*peer-address* | *peer-group-name*} **soo**

**default neighbor** { *peer-address* | *peer-group-name* } **soo**

### Parameter Description

Parameter	Description
<i>peer-address</i>	IP address of the peer, IPv4 or IPv6 address
<i>peer-group-name</i>	Name of the peer group of up to 32 characters
<i>soo-value</i>	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 nn is 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**                   In CE dual-home mode, execute this command to prevent routes sent by CE to PEs from being sent back to CE.

### Guide

The following example sets the SOO value of the neighbor.

### Configuration Examples

```
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
<b>router bgp</b>	Enables the BGP protocol.
<b>timers bgp</b>	Configures the keepalive and holdtime values globally.

### Platform

**Description** None

## 5.111 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 setting.

**neighbor** {*peer-address* | *peer-group-name*} **timers** *keepalive holdtime* [*minimum-holdtime*]

**no neighbor** [*peer-address* | *peer-group-name*] **timers**

**default neighbor** { *peer-address* | *peer-group-name* } **timers** [ **connect** ]

### Parameter Description

Parameter	Description
<i>peer-address</i>	IP address of the peer, IPv4 or IPv6 address
<i>peer-group-name</i>	Name of the peer group of up to 32 characters
<i>keepalive</i>	Time interval to send the KEEPALIVE message to the BGP peer. Range: 0-65535 seconds
<i>holdtime</i>	Time interval to consider the BGP peer alive Range: 0-65535 seconds
<i>minimum-holdtime</i>	Allows a minimum holdtime value of neighbor advertisement. It is unrestricted when the value is 0. The range is 0 to 65535 seconds.
<i>connect-retry</i>	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 or BGP Scope configuration mode.

### Usage

A proper keepalive value must not exceed one-third of the holdtime value.

**Guide**

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**

The following example sets the keepalive and holdtime time values used for establishing the BGP connection.

**Examples**

```
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
<b>router bgp</b>	Enables the BGP protocol.
<b>timers bgp</b>	Sets the keepalive and holdtime values globally.

**Platform****Description**

None

## 5.112 neighbor unsuppress-map

Use this command to selectively advertise routing information suppressed by aggregate-address command. Use the **no** or **default** form of this command to restore the default setting.

**neighbor {*peer-address* | *peer-group-name*} unsuppress-map *map-tag***

**no neighbor {*peer-address* | *peer-group-name*} unsuppress-map *map-tag***

**default neighbor { *peer-address* | *peer-group-name* } unsuppress-map *map-tag***

**Parameter****Description**

Parameter	Description
<i>peer-address</i>	IP address of the peer
<i>peer-group-name</i>	Name of the peer group of up to 32 characters
<i>map-tag</i>	Name of the route-map of up to 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, BGPL2VPN EVPN address family configuration mode.

This command advertises the specified suppressed routes.

**Usage** 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
	<b>router bgp</b>	Enables the BGP protocol.
	<b>neighbor remote-as</b>	Configures the BGP peer.
	<b>aggregate-address</b>	Configures the aggregate address.
	<b>route-map</b>	Configures the route-map

**Platform**  
**Description** None

## 5.113 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 setting.

**neighbor** { peer-address | peer-group-name } **update-delay** time

**no neighbor** { peer-address | peer-group-name } **update-delay**

**default neighbor** { peer-address | peer-group-name } **update-delay**

Parameter Description	Parameter	Description
	<i>peer-address</i>	IP address of the peer, IPv4 or IPv6 address
	<i>peer-group-name</i>	Name of the peer group of up to 32 characters
	<i>time</i>	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 Guide** After BGP starts, BGP peers negotiate to establish the neighborhood before sending route 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.



In addition, after **update-delay** is configured on the local end, a specific neighbor sends route information to the local end, the local end selects an optimum route, and then sends out the route information immediately to other neighbors by default. In this case, extra advertisement also occurs. Therefore, the value of **update-delay** includes two parts: delay of route advertisement from the local end to a specific neighbor and delay of route advertisement from the local end to other neighbors after the specific neighbor advertises the route information to the local end. If the BGP peer group is specified, all members of the peer group adopt the settings of this command.

**Configuration**

The following example sets the delayed time to 60s.

**Examples**

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 update-delay 60
```

**Platform****Description**

N/A

## 5.114 neighbor update-source

Use this command to configure the interface for BGP connection of the IBGP peer..

**neighbor** { peer-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** {peer-address | peer-group-name} **update-source**

Use the **default** form of the command to restore the default settings.

**default neighbor** { peer-address | peer-group-name } **update-source**

**Parameter****Description**

Parameter	Description
<i>peer-address</i>	IP address of the peer, IPv4 or IPv6 address
<i>peer-group-name</i>	Name of the peer group of up to 32 characters
<i>interface-type</i> <i>interface-number</i>	Interface name
<i>address</i>	The interface address which is used for 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/ Scope configuration mode

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.

#### Usage

#### Guide

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 loopback 1
```

#### Related Commands

Command	Description
<b>router bgp</b>	Enables the BGP protocol.
<b>neighbor remote-as</b>	Configures the BGP peer.

#### Platform

**Description** None

## 5.115 neighbor version

Use this command to display the number of the BGP protocol version used by the specific BGP neighbor. Use the **no** or **default** form of this command to restore the default setting.

**neighbor** { *peer-address* | *peer-group-name* } **version** *number*

**no neighbor** { *peer-address* | *peer-group-name* } **version**

**default neighbor** { *peer-address* | *peer-group-name* } **version**

#### Parameter Description

Parameter	Description
<i>peer-address</i>	IP address of the peer
<i>peer-group-name</i>	Name of the peer group of up to 32 characters
<i>number</i>	Version number

#### Defaults

The default version number is 4.

#### Command Mode

BGP configuration mode, BGP IPv4/IPv6 VRF address family configuration mode or 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 neighbor.

**Examples**

```
Ruijie(config-router)# neighbor 10.1.1.1 version 4
```

**Related****Commands**

Command	Description
<b>router bgp</b>	Enables the BGP protocol.
<b>neighbor remote-as</b>	Configures the BGP peer.

**Platform**

**Description** None

## 5.116 neighbor weight

Use this command to set the weight for the specific neighbor. Use the **no** or **default** form of this command to restore the default setting.

**neighbor** {*peer-address*|*peer-group-name*} **weight** *number*

**no neighbor** {*peer-address*|*peer-group-name*} **weight**

**default neighbor** { *peer-address* | *peer-group-name* } **weight**

**Parameter****Description**

Parameter	Description
<i>peer-address</i>	IP address of the peer
<i>peer-group-name</i>	Name of the peer group of up to 32 characters
<i>number</i>	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**

A loopback interface address can be configured on different interfaces. You need to specify only the interface name,

**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**

Command	Description
---------	-------------

Commands	<b>router bgp</b>	Enables the BGP protocol.
	<b>neighbor remote-as</b>	Configures the BGP peer.

**Platform**

**Description** None

## 5.117 network

Use this command to configure the network information to be advertised by the local BGP speaker.  
Use the **no** or **default** form of this command to restore the default setting.

**network** *network-number* [**mask** *mask*] [**route-map** *map-tag*] [**backdoor**]

**no network** *network-number* [**mask** *mask*] [**route-map** *map-tag*] [**backdoor**]

**default network** *network-number* [**mask** *mask*] [**route-map** *map-tag*] [**backdoor**]

<b>Parameter</b> <b>Description</b>	Parameter	Description
	<i>network-number</i>	Network number
	<i>mask</i>	Subnet mask
	<i>map-tag</i>	Name of the route-map of up to 32 characters
	<b>backdoor</b>	The route is a backdoor route.

**Defaults** No network information is specified 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** 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
```

<b>Related Commands</b>	Command	Description
	<b>router bgp</b>	Enables the BGP protocol.
	<b>redistribute</b>	Configures the route redistribution.
	<b>Network synchronization</b>	Enables network synchronization.

**Platform**

**Description** None

## 5.118 network synchronization

Use this command to advertise the network information after the local BGP speaker is synchronized with the local device. Use the **no** or **default** form of this command to directly advertise the network information.

**network synchronization**

**no network synchronization**

**default network synchronization**

Parameter	Parameter	Description
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 or BGP Scope configuration mode.

**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
	<b>router bgp</b>	Enables the BGP protocol.
	<b>redistribute</b>	Configures the route redistribution.
	<b>network(BGP)</b>	Configures the route to be distributed.

**Platform**

**Description** None

## 5.119 overflow memory-lack

Use this command to allow BGP to enter the OVERFLOW state when the memory is insufficient. Use the **no** or **default** form of this command to disable this function.

**overflow memory-lack**

**no overflow memory-lack**

**default overflow memory-lack**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** Allow the BGP to enter the OVERFLOW state when the memory is insufficient.

## Command

**Mode** BGP configuration mode or BGP Scope Global configuration mode

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.

## Usage

**Guide** 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 memory-lack
```

## Related Commands

Command	Description
<b>clear bgp { addressfamily all } *</b>	Resets the BGP address family.
<b>show bgp { addressfamily all } summary</b>	Displays the summary of the BGP address family.

## Platform

**Description** None

## 5.120 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 setting.

**rd { auto | rd\_value }**

**no rd { auto | rd\_value }**

**default rd**

Parameter	Parameter	Description
-----------	-----------	-------------

<b>Description</b>	<b>auto</b>	Generates the RD value automatically.
	<b>rd_value</b>	<p>Indicates value of the RD.</p> <p>There are 3 forms of rd_value:</p> <ol style="list-style-type: none"> <li>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.</li> <li>rd_value = ip_addr:nn The ip_addr refers to the global IP address and nn is customized. The range is from 0 to 65,535.</li> <li>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.</li> </ol>

**Defaults** The RD value is not configured by default.




### Command

**Mode** evpn-vni configuration mode

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.

### Usage

#### Guide

-  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.
-  The format of **auto** is **ip\_addr:nn**. The **ip\_addr:nn** indicates BGP **router-id**, and the **nn** indicates value of **vni-id**. Because the **vni-id** will occupy at most 3B space and the space of **nn** is 2B only, when **vni-id** exceeds the 2B limitation, it will be split first and then be put in the **nn**. After being generated, the value of **rd auto** can never be changed.

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
```

### Configuration

#### Examples

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

## 5.121 redistribute

Use this to redistribute routes between the other routing protocol and the BGP. Use the **no** or **default** 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**]

**default redistribute** *protocol-type* [**route-map** *map-tag*] [**metric**]

**Parameter****Description**

Parameter	Description
<i>protocol-type</i>	The source protocol types for redistributing routes, including connected, static, RIP
<b>route-map</b> <i>map-tag</i>	Specifies the route map. No route map is associated with by default.
<b>metric</b> <i>metric-value</i>	Sets the default metric of the routes to be redistributed, null by default.

**Defaults**

This function is disabled by default.

**Command**


BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP


**Mode**

IPv4/IPv6 VRF address family configuration mode or BGP Scope configuration mode.

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.

**Usage****Guide**

 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
	<b>show ip protocol</b>	Displays the protocol configuration.

**Platform****Description** None

## 5.122 redistribute ospf

Use this command to redistribute routes between OSPF and BGP. Use the **no** or **default** 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**] [**match** { **internal|external** [1 | 2] | **nssa-external** [1 | 2] }]

**default redistribute ospf** *process-id* [**route-map** *map-tag*] [**metric**] [**match** { **internal** | **external** [1 | 2] | **nssa-external** [1 | 2] }]


**Parameter  
Description**

Parameter	Description
<i>process-id</i>	OSPF process ID to be redistributed
<b>route-map</b> <i>map-tag</i>	Specifies the route map. No route map is associated by default.
<b>metric</b> <i>metric-value</i>	Sets the default metric of the routes to be redistributed, null by default.
<b>match</b>	Matches the sub type of OSPF routes.
<b>internal</b>	Matches the internal OSPF routes, the default configuration.
<b>external</b> [1   2]	Matches the external OSPF routes. You can specify the concrete type (v1 or v2) or v1 and v2 without indication.
<b>nssa- external</b> [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, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode or BGP Scope configuration mode.

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.

**Usage****Guide**

-  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.

The following example redistributes routes between OSPF and BGP.

#### Configuration Examples

```
Ruijie(config-router)# redistribute ospf 2 route-map static-rmap
Ruijie(config-router)# no redistribute ospf 4 match external route-map
ospf-rmap
Ruijie(config-router)# no redistribute ospf 78
```

#### Related Commands

Command	Description
<b>show ip protocol</b>	Displays the protocol configuration.

#### Platform

Description None

## 5.123 redistribute isis

Use this command to redistribute routes between ISIS and BGP. Use the **no** or **default** 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**]

**default redistribute isis** [*isis-tag*] [**route-map** *map-tag*] [**metric**] [**level-1** | **level-1-2** | **level-2**]

#### Parameter Description

Parameter	Description
<i>isis-tag</i>	(Optional)ISIS process ID to be redistributed
<b>route-map</b> <i>map-tag</i>	Specifies the route map. No route map is associated by default.
<b>metric</b> <i>metric-value</i>	Sets the default metric of the routes to be redistributed, null by default.
<b>level-1</b>	Redistributes level-1 ISIS routes.
<b>level-1-2</b>	Redistributes level-1 and level-2 ISIS routes.
<b>level-2</b>	Redistributes level-2 ISIS routes.

#### 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


When a switch supports multiple routing protocols, the coordination between these protocols

#### Guide

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.

The following example redistributes routes between ISIS and BGP.

#### Configuration Examples

```
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
<b>show ip protocol</b>	Displays the protocol configuration.

#### Platform

**Description** None

## 5.124 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 setting.

**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
<b>auto</b>	Generates the RD value automatically.
<b>import</b>	Sets the import RT value.
<b>export</b>	Sets the export RT value.
<b>both</b>	Sets the import and export RT value.
<i>rt_value</i>	Indicates value of the RT. There are 3 forms of <i>rt_value</i> : 1. <i>rt_value</i> = 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. <i>rt_value</i> = ip_addr:nn The ip_add refers to the global IP address and nn is customized. The

	<p>range is from 0 to 65,535.</p> <p>3. <code>rt_value = as4_num:nn</code></p> <p>The <code>as4_num</code> indicates the public AS number (2 bytes) and <code>nn</code> is customized. The range is from 0 to 65,535.</p> <p>The 4-byte AS notation range is from 1 to 4,294,967,295, represented as from 1 to 65535.65535 in dot mode.</p>
--	---

**Defaults** The RT value is not configured by default.


**Command**

**Mode** evpn-vni configuration mode


One EVI can be configured with multiple import and export RT values.

**Usage**

**Guide**

 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.

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.

**Configuration**

**Examples**

```
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

## 5.125 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** or **default** form of this command to restore the default setting.

**router bgp** *as-number*

**no router bgp** *as-number*

**default router bgp** *as-number*

Parameter Description	Parameter	Description
	<i>as-number</i>	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.
Defaults	This function is disabled by default.	
Command		
Mode	Global configuration mode	
Usage	This command is used to start the BGP protocol.	
Guide	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	The following example enables the BGP protocol.	
Examples	<pre>Ruijie(config)# router bgp 65000</pre>	
Related Commands	Command	Description
	<b>ip routing</b>	Enables IP routing.
	<b>bgp router-id</b>	Sets the ID of the device running the BGP protocol
	<b>network</b>	Sets the network information to be advertised by the local BGP speaker.
Platform		
Description	None	

## 5.126 synchronization

Use this command to enable the synchronization mechanism of BGP and IGP routing information. Use the **no** or **default** form of this command to restore the default setting.

**synchronization**

**no synchronization**

**default synchronization**

Parameter Description	Parameter	Description
	N/A	N/A
Defaults	This function is disabled by default.	

**Command** BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode or BGP Scope configuration mode.

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.

**Usage**  
**Guide**

- 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** The following example enables the synchronization mechanism of BGP and IGP routing information.

**Examples**

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# synchronization
```

**Related**  
**Commands**

Command	Description
<b>router bgp</b>	Enables the BGP protocol.

**Platform**

**Description** None

## 5.127 table-map

Use this command to control the route information distributed to the kernel table. Use the **no** or **default** form of this command to restore the default setting.

**table-map** *route-map-name*

**no table-map**

**default table-map**

**Parameter**  
**Description**

Parameter	Description
<i>route-map-name</i>	Name of the route-map

**Defaults** No table-map is configured by default,

**Command** 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**

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** The following example controls the route information distributed to the kernel table.

**Examples**

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# table-map bgp_tm
```

**Related****Commands**

Command	Description
<b>route-map</b>	Configures the route-map

**Platform****Description**

None

## 5.128 timers bgp

Use this command to adjust the BGP network timer. Use the **no** or **default** form of this command to restore the default value.

**timers bgp** *keepalive holdtime* [*minimum-holdtime*]

**no timers bgp**

**default timers bgp**

**Parameter****Description**

Parameter	Description
<i>keepalive</i>	Time interval to send the keepalive message to the BGP peer Range: 0-65535 seconds.
<i>holdtime</i>	Time interval to consider the BGP peer alive Range: 0-65535 seconds.
<i>Minimum-holdtime</i>	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 / BGP scope global configuration mode

**Usage**

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.

**Guide**

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 Commands

Command	Description
<b>neighbor timers</b>	Sets the keepalive and holdtime values on the basis of neighbors.

### Platform

**Description** None

## 5.129 show bgp all

Use this command to display all the address-families information of BGP route. The use of this command is consistent with other BGP's show commands.

Display the parameters of the route information.

```
show bgp all [ community [ community-number [ exact-match ] ] | filter-list path-list-number | community-list community-name [ exact-match ] | extcommunity-list extcommunity-name | regex regex | quote-regex regex | inconsistent-as ]
```

Display the route dampening parameter.

```
show bgp all dampening { flap-statistics | dampened-paths | parameters }
```

Display the related information of the neighbors.

```
show bgp all neighbors [ peer-address [ received-routes | routes | advertised-routes | policy [ detail ] ] ]
```

```
show bgp all summary
```

Display the path information.

```
show bgp all paths
```

### Parameter Description

Parameter	Description
<b>community</b> <i>community-number</i>	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.
<b>community-list</b> <i>community-name</i>	Displays the BGP routing information matching the specified community-list.
<b>exact-match</b>	Routing information exactly matching the



	community value or community-list.
<b>dampening dampened-paths</b>	Displays the restrained routing information.
<b>dampening flap-statistics</b>	Displays the routing dampening statistics.
<b>dampening parameters</b>	Displays the routing dampening parameters.
<b>extcommunity-list</b> <i>extcommunity-name</i>	Displays the routing information including the specified extcommunity value.
<b>filter-list</b> <i>path-list-number</i>	Displays the routing information matching the filter-list.
<b>inconsistent-as</b>	Displays the routing information of the inconsistent source AS.
<b>neighbors</b> [ <i>peer-address</i> ]	Displays all the BGP neighbors' information.
<b>neighbors</b> <i>peer-address</i> <b>received-route</b>	Displays all routing information received from the specified peer (including the accepted and refused route).
<b>neighbors</b> <i>peer-address</i> <b>routes</b>	Displays all the accepted routing information received from the peer.
<b>neighbors</b> <i>peer-address</i> <b>advertised-routes</b>	Displays all the routing information sent to the specified peer.
<b>neighbors</b> <i>peer-address</i> <b>policy</b>	Displays the related routing policy information of BGP neighbors. (General)
<b>neighbors</b> <i>peer-address</i> <b>policy detail</b>	Displays the related routing policy information of BGP neighbors. (Detail)
<b>quote-regexp</b> <i>regexp</i>	Displays the BGP routing information with the AS path attribute matching the specified regexp within the double quote marks.
<b>regexp</b> <i>regexp</i>	Displays the BGP routing information with the AS path attribute matching the specified regexp.

**Defaults** Please refer to the detailed description of **show bgp ipv4 unicast** command.

## Command

**Mode** Privileged EXEC mode

## Usage

**Guide** N/A

The following example shows all neighbors' information.

## Configuration Examples

```
Ruijie(config)# show bgp all
```

```
For address family: IPv4 Unicast
```

```
BGP table version is 1, local router ID is 1.2.3.4
```

```
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      Weight Path
*> 1.0.0.0         0.0.0.0              0                32768      ?

Total number of prefixes 1

For address family: IPv6 Unicast

BGP table version is 1, local router ID is 1.2.3.4

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      Weight Path
*> 5750:1::/120    ::              0                32768      ?

Total number of prefixes 1

```

**Related  
Commands**

Command	Description
<b>show bgp ipv4 unicast</b>	Displays the IPv4 unicast route information of BGP

**Platform**

**Description**      None

## 5.130 show bgp ipv4 unicast

Use this command to display the IPv4 unicast route information of BGP.

**show bgp ipv4 unicast** [ vrf *vrf-name* ] [ *network* [ *network-mask* ] ]

**show bgp ipv4 unicast** [ vrf *vrf-name* ] community *community-number* [ exact-match ]

**show bgp ipv4 unicast** [ vrf *vrf-name* ] community-list *community-name* [ exact-match ]

**show bgp ipv4 unicast** [ vrf *vrf-name* ] extcommunity-list *extcommunity-name*

**show bgp ipv4 unicast [ vrf *vrf-name* ] dampening dampened-paths**

**show bgp ipv4 unicast [ vrf *vrf-name* ] dampening flap-statistics**

**show bgp ipv4 unicast [ vrf *vrf-name* ] filter-list *path-list-number***

**show bgp ipv4 unicast [ vrf *vrf-name* ] inconsistent-as**

**show bgp ipv4 unicast [ vrf *vrf-name* ] prefix-list *ip-prefix-list-name***

**show bgp ipv4 unicast [ vrf *vrf-name* ] quote-regexp *regexp***

**show bgp ipv4 unicast [ vrf *vrf-name* ] regexp *regexp***

**show bgp ipv4 unicast[ vrf *vrf-name* ] route-map *map-tag***

**show bgp ipv4 unicast [ vrf *vrf-name* ] neighbors [ *neighbor-address* [ **received-routes** | **routes** | **advertised-routes** | **policy** [ **detail** ] ] ]**

**show bgp ipv4 unicast [ vrf *vrf-name* ] cidr-only**

**Parameter  
Description**

Parameter	Description
<i>vrf-name</i>	VRF name
<i>network</i>	Displays the specific routing information in the routing table
<i>network-mask</i>	Displays the routing information included in the specified network.
<b>longer-prefixes</b>	Displays the route map information.
<b>community</b> <i>community-number</i>	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.
<b>community-list</b> <i>community-name</i>	Displays the BGP routing information matching the specified community-list.
<b>exact-match</b>	Routing information exactly matching the community value or community-list.
<b>extcommunity-list</b> <i>extcommunity-name</i>	Displays the routing information including the specified extcommunity value.
<b>dampening dampened-paths</b>	Displays the restrained routing information.
<b>dampening flap-statistics</b>	Displays the routing dampening statistics.
<b>filter-list</b> <i>path-list-number</i>	Displays the routing information matching the filter-list.
<b>inconsistent-as</b>	Displays the routing information of the inconsistent source AS.
<b>prefix-list</b> <i>ip-prefix-list-name</i>	Displays the routing information matching the specified prefix-list.
<b>quote-regexp</b> <i>regexp</i>	Displays the BGP routing information with the AS path attribute matching the specified regexp within the double quote marks.
<b>regexp</b> <i>regexp</i>	Displays the BGP routing information with the AS path attribute matching the specified regexp.
<b>route-map</b> <i>map-tag</i>	Displays the routing information matching the specified route-map filtering condition.

<b>neighbors</b> [ <i>neighbor-address</i> ]	Displays the BGP IPv4 unicast neighbor information.
<b>neighbors</b> <i>neighbor-address</i> <b>received-routes</b>	Displays all routing information received from the specified peer (including the accepted and refused route).
<b>neighbors</b> <i>neighbor-address</i> <b>routes</b>	Displays all the routing information received from the peer and accepted.
<b>neighbors</b> <i>neighbor-address</i> <b>advertised-routes</b>	Displays all the routing information sent to the specified peer.
<b>neighbors</b> <i>neighbor-address</i> <b>policy</b>	Displays the related routing policy information of BGP neighbors. (General)
<b>neighbors</b> <i>neighbor-address</i> <b>policy detail</b>	Displays the related routing policy information of BGP neighbors. (Detail)
<b>cidr-only</b>	Displays the routing information without the category.
<b>labels</b>	Displays the BGP-learned and BGP-sent routes with the MPLS label.

Defaults N/A

#### Command

**Mode** Privileged EXEC mode

**Usage** 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
<b>show ip bgp</b>	Displays the IPv4 unicast route information of BGP.

**Platform**

**Description**

None

## 5.131 show bgp ipv4 unicast dampening parameters

Use this command to display the IPv4 unicast route dampening parameters configured for the BGP.

**show bgp ipv4 unicast [ vrf *vrf-name* ] dampening parameters**

Parameter	Parameter	Description
Description	<i>vrf-name</i>	VRF name

**Defaults** N/A

**Command**

**Mode** Privileged EXEC mode

**Usage** This command is used to display the IPv4 unicast route dampening parameters configured for  
**Guide** BGP.

The following example displays the IPv4 unicast route dampening parameters configured for the BGP.

**Configuration**  
**Examples**

```
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

## 5.132 show bgp ipv4 unicast neighbors

Use this command to display the related information of BGP IPv4 unicast neighbor.

**show bgp ipv4 unicast [ vrf *vrf-name* ] neighbors *neighbor-address***

Parameter	Parameter	Description
Description	<i>vrf-name</i>	VRF name
	<i>neighbor-address</i>	Neighbor IPv4 address

<b>neighbors</b> <i>neighbor-address</i> <b>policy</b>	Displays the related routing policy information of BGP neighbors. (General)
<b>neighbors</b> <i>neighbor-address</i> <b>policy detail</b>	Displays the related routing policy information of BGP neighbors. (Detail)

**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.

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: ::
```

**Configuration Examples**

```
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

## 5.133 show bgp ipv4 unicast paths

Use this command to display the path information of the IPv4 unicast in the route database.

**show bgp ipv4 unicast [ vrf *vrf-name* ] paths**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** N/A**Command****Mode** Privileged EXEC mode**Usage****Guide** This command is used to view the path information in the route database.

The following example displays the path information of the IPv4 unicast in the route database.

**Configuration****Examples**

```
Ruijie# show bgp ipv4 unicast paths
Address Refcnt Path
[0x1d7806a0:0] (67)
[0x1d7389a0:13] (20) 10
```

**Related****Commands** N/A**Platform****Description** None

## 5.134 show bgp ipv4 unicast summary

Use this command to display the related information of BGP IPv4 unicast.

**show bgp ipv4 unicast [ vrf *vrf-name* ] summary**



Parameter	Parameter	Description
Description	<i>vrf-name</i>	VRF 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	<p>The following example displays the related information of BGP IPv4 unicast.</p> <pre> 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 </pre>	
Related Commands	Command	Description
	<b>router bgp</b>	Enables the BGP protocol
Platform		
Description	None	

## 5.135 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* ] **extcommunity-list** *extcommunity-name*

**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**]

**Parameter  
Description**

Parameter	Description
<i>vrf-name</i>	VRF name
<i>IPv6-prefix</i>	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>.
<b>longer-prefixes</b>	Displays the route map information.
<b>community</b> <i>community-number</i>	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.
<b>community-list</b> <i>community-name</i>	Displays the BGP routing information matching the specified community-list.
<b>exact-match</b>	Routing information exactly matches the community value or community-list.
<b>extcommunity-list</b> <i>extcommunity-name</i>	Displays the routing information including the specified extcommunity value.
<b>dampening</b> <b>dampened-paths</b>	Displays the restrained routing information.
<b>dampening flap-statistics</b>	Displays the routing dampening statistics.
<b>filter-list</b> <i>path-list-number</i>	Displays the routing information matching the filter-list.
<b>inconsistent-as</b>	Displays the routing information of the inconsistent source AS.
<b>prefix-list</b> <i>ipv6-prefix-list-name</i>	Displays the routing information matching the specified prefix-list.
<b>quote-regexp</b> <i>regexp</i>	Displays the BGP routing information with the AS path attribute matching the specified regexp within the double quote marks.
<b>regexp</b> <i>regexp</i>	Displays the BGP routing information with the AS path attribute matching the specified regexp.
<b>route-map</b> <i>map-tag</i>	Displays the routing information matching the specified route-map filtering condition.
<b>neighbors</b> [ <i>neighbor-address</i> ]	Displays the BGP IPv6 unicast neighbor information.
<b>neighbors</b> <i>neighbor-address</i> <b>received-routes</b>	Displays all routing information received from the specified peer (including accepted and refused routes).
<b>neighbors</b> <i>neighbor-address</i> <b>routes</b>	Displays all the routing information received from the peer and accepted.

<b>neighbors</b> <i>neighbor-address</i> <b>advertised-routes</b>	Displays all the routing information sent to the specified peer.
<b>neighbors</b> <i>neighbor-address</i> <b>policy</b>	Displays the related routing policy information of BGP neighbors. (General)
<b>neighbors</b> <i>neighbor-address</i> <b>policy detail</b>	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
<b>show bgp ipv4 unicast</b>	Displays the IPv4 unicast route information of BGP.

**Platform**

**Description** None

## 5.136 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
<i>vrf-name</i>	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
	<b>show bgp ipv4 unicast dampening parameters</b>	Displays the IPv4 unicast route dampening parameters configured for BGP.

Platform

Description None

## 5.137 show bgp ipv6 unicast neighbors

Use this command to display the related information of BGP IPv6 unicast neighbor.

**show bgp ipv6 unicast** [ *vrf vrf-name* ] **neighbors** *neighbor-address*

Parameter Description	Parameter	Description
	<i>vrf-name</i>	VRF name
	<i>neighbor-address</i>	Neighbor IPv6 address.
	<b>neighbors</b> <i>neighbor-address</i> <b>policy</b>	Related route policy information of BGP neighbor. (General)
	<b>neighbors</b> <i>neighbor-address</i> <b>policy detail</b>	Related route policy information of BGP neighbor. (Detail)

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 Commands	Command	Description
	<b>show bgp ipv4 unicast neighbors neighbor-address</b>	Displays the related information of BGP IPv4 unicast neighbor.

Platform

Description None

## 5.138 show bgp ipv6 unicast paths

Use this command to display the path information of the IPv6 unicast in the route database.

**show bgp ipv6 unicast [ vrf *vrf-name* ] paths**

Parameter	Parameter	Description
Description	vrf-name	VRF name

**Defaults** N/A

**Command**

**Mode** Privileged EXEC mode

**Usage**

**Guide** This command is used to view the path information in the route database.

The following example displays the path information of the IPv6 unicast in the route database.

**Configuration Examples**

```
Ruijie# show bgp ipv6 unicast paths
Address  Refcnt Path
[0x1d7806a0:0] (67)
[0x1d7389a0:13] (20) 10
```

**Related Commands**

Command	Description
<b>show bgp ipv4 unicast paths</b>	Displays the path information of the IPv4 unicast in the route database.

**Platform**

**Description** None

## 5.139 show bgp ipv6 unicast summary

Use this command to display the related information of BGP IPv6 unicast.

**show bgp ipv6 unicast [ vrf *vrf-name* ] summary**

Parameter	Parameter	Description
Description	vrf-name	VRF name.

**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** N/A

## Examples

Related  
Commands

Command	Description
<b>router bgp</b>	Enables the BGP protocol
<b>show bgp ipv4 unicast summary</b>	Displays the related information of BGP IPv4 unicast.

## Platform

## Description

None

## 5.140 show bgp l2vpn

Use the following command to display the BGP L2VPN routing information.

**show bgp l2vpn { evpn } all**

Use the following command to display the neighbor information of the BGP L2VPN EVPN address family.

**show bgp l2vpn evpn all { ethernet-ad | ethernet-segment | inclusive-multicast | ip-prefix | mac-ip } [ detail ]**

Use the following command to display the neighbor information of the BGP L2VPN address family.

**show bgp l2vpn evpn all mac-ip mac\_addr [ ip\_addr [detail] | ipv6\_addr [detail] | detail ]**

Use the following command to display the neighbor summary information of the BGP L2VPN address family.

**show bgp l2vpn { evpn } all summary**

Use the following command to display the L2VPN EVPN information on the specified RD.

**show bgp l2vpn evpn rd vpn\_rd [[ethernet-ad | ethernet-segment | inclusive-multicast | ip-prefix | mac-ip ] [ detail ]]**

Use the following command to display the L2VPN VPLS/VPWS information on the specified VFI.

**show bgp l2vpn evpn evi vni-id [[ethernet-ad | ethernet-segment | inclusive-multicast | ip-prefix | mac-ip ] [ detail ]]**

Parameter  
Description

Parameter	Description
<b>evpn</b>	Displays EVPN information.
<b>all</b>	Displays all NLRI information that contains the VPLS instance or the VPWS instance.
<i>ve_id:offset</i>	Displays the VFI instance information of the specified <i>ve_id:offset</i>
<b>ethernet-ad [detail]</b>	Displays basic (detailed) information of the first type of BGP L2VPN EVPN routes.
<b>ethernet-segment [detail]</b>	Displays basic (detailed) information of the fourth type of BGP

	L2VPN EVPN routes.
<b>inclusive-multicast [detail]</b>	Displays basic (detailed) information of the third type of BGP L2VPN EVPN routes.
<b>ip-prefix [detail]</b>	Displays basic (detailed) information of the fifth type of BGP L2VPN EVPN routes.
<b>ip-prefix [ ip_addr [detail]   ipv6_addr [detail]   detail ]</b>	Displays basic (detailed) information of routes with specific IP address or IPv6 address in the fifth type of BGP L2VPN EVPN routes.
<b>mac-ip [detail]</b>	Displays basic (detailed) information of the second type of BGP L2VPN EVPN routes.
<b>mac-ip mac_addr [ ip_addr [detail]   ipv6_addr [detail]   detail ]</b>	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.
<b>neighbor [ peer-address ]</b>	Displays the BGP L2VPN neighbor information. You can specify the specific neighbor information by entering the parameter <i>peer-address</i> . Otherwise all BGP L2VPN neighbor information is displayed.
<b>neighbor peer-address policy</b>	Displays the summarized routing policy information on BGP neighbor.
<b>neighbor peer-address policy detail</b>	Displays the detailed routing policy information BGP neighbor,
<b>summary</b>	Displays main BGP L2VPN information, including site ID, OFFSET, LABEL BASE and NEXT HOP.
<b>rd vpn_rd</b>	The specified RD.
<b>vfi vfi_name</b>	The specified VFI instance.
<b>evi vni-id</b>	The specified evl instance.

**Defaults** N/A

**Command**

**Mode** Privileged EXEC mode

**Usage**

**Guide**

The following example displays all L2VPN EVPN address family routing information.

**Configuration**

**Examples**

```
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

```

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.

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

## 5.141 show bgp statistics

Use this command to display the BGP statistics information.

**show bgp statistics** [ **vrf** *vrf-name* ]

**Parameter  
Description**

Parameter	Description
<b>vrf</b> <i>vrf-name</i>	Displays the BGP statistics information of VRF.

**Defaults** N/A

**Command  
Mode**

Privileged EXEC mode

**Usage**

**Guide**

Without the **vrf** parameter, the global BGP statistics information will be displayed.

The following example displays the BGP statistics information.

**Configuration  
Examples**

```
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

## 5.142 show evpn

Use this command to display the EVI instance.

**show evpn** [ *vni-id* [detail] / detail ]

Parameter	Parameter	Description
<b>Description</b>	<i>vni-id</i>	Indicates the ID of specified EVI instance.

**Defaults** N/A

**Command****Mode**

Privileged EXEC mode

**Usage**

If an ID of EVI instance is exported, display the information of the EVI. If no EVI ID is imported, display all EVIs' information.

**Guide**

The following example displays all information of EVI 100.

```
Ruijie#show evpn 100 detail
EVI 100, 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)
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
```

**Configuration Examples**

Parameter	Description
RD	RD value of 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

## 5.143 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** [ **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** ] | **regex** *regex* | **quote-regex** *regex* | **extcommunity-list** *extcommunity-name* | **inconsistent-as** | **prefix-list** *ip-prefix-list-name* | **route-map** *map-tag* ]

Display route flap's parameters.

**show ip bgp** [ **vrf** *vrf-name* ] **dampening** { **flap-statistics** | **dampened-paths** | **parameters** }

Display neighbors' related information.

**show ip bgp** [ **vrf** *vrf-name* ] **neighbors** [ *peer-address* [ **received-routes** | **routes** | **advertised-routes** [ **policy** [ **detail** ] ] ] ]

**show ip bgp** [ **vrf** *vrf-name* ] **summary**

Display directory information.

**show ip bgp** [ **vrf** *vrf-name* ] **paths**

Display route scan status.

**show ip bgp scan**

**Parameter  
Description**

Parameter	Description
<i>vrf-name</i>	VRF name.
<i>network</i>	Displays specific route information in the route table.
<i>network-mask</i>	Displays route information in the specific network.
<b>longer-prefixes</b>	Displays the route map information.
<b>cidr-only</b>	Displays route information without specific category.
<b>community</b> <i>community-number</i>	Displays route information containing specific community value. The <i>community-number</i> 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.
<b>community-list</b>	Displays the BGP route information of the specified community list.

<i>community-name</i>	The <i>community-name</i> is the name of the community list.
<b>dampening</b>	
<b>dampened-paths</b>	Displays dampened route information.
<b>dampening flap-statistics</b>	Displays the route flap statistics.
<b>dampening parameters</b>	Displays believed route flap parameters.
<b>extcommunity-list</b>	Displays route information containing specific extcommunity value.
<b>filter-list</b> <i>path-list-number</i>	Displays the route information that complies with the filter list. The <i>path-list-number</i> is the marking number of the filter list.
<b>inconsistent-as</b>	Displays the route information of inconsistent source AS.
<b>labels</b>	Displays the IPv4 label route information.
<b>neighbors</b> <i>peer-address</i>	Displays the route information of BGP neighbors.
<b>neighbors</b> <i>peer-address</i> <b>received-routes</b>	Displays all routing information received from the specified peer (including accepted and refused routes).
<b>neighbors</b> <i>peer-address</i> <b>routes</b>	Displays all the routing information received from the peer and accepted.
<b>neighbors</b> <i>peer-address</i> <b>advertised-routes</b>	Displays all the routing information sent to the specified peer.
<b>neighbors</b> <i>peer-address</i> <b>policy</b>	Displays the related routing policy information of BGP neighbors. (General)
<b>neighbors</b> <i>peer-address</i> <b>policy detail</b>	Displays the related routing policy information of BGP neighbors. (Detail)
<b>paths</b>	Displays the route information in the route database.
<b>prefix-list</b> <i>ip-prefix-list-name</i>	Displays the route information that complies with the prefix list.
<b>quote-regexp</b> <i>regexp</i>	Displays the BGP route information of regular expression in the specified double quotation mark of the AS route attribute.
<b>regexp</b> <i>regexp</i>	Displays the BGP route information of specified regular expression of the AS route attribute.
<b>route-map</b> <i>map-tag</i>	Displays the route information that complies with the route map.
<b>scan</b>	Displays the BGP route scanning status.
<b>summary</b>	Displays related information of BGP neighbors.

**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**

## 5.144 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 setting.

**vni** *vni-id***no vni** *vni-id***default vni** *vni-id*

Parameter	Parameter	Description
Description	<i>vni-id</i>	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	Command	Description
Commands	N/A	N/A

**Platform****Description** N/A

## 6 PBR Commands

### 6.1 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
<b>interface</b> <i>if-name</i>	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.
<b>local</b>	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** The following example clears the IPv4 PBR forwarded packet count.

**Examples** Ruijie#clear ip pbr statistics

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description** N/A

### 6.2 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
<b>interface</b> <i>if-name</i>	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.
<b>local</b>	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** The following example clears the IPv6 PBR forwarded packet count.

**Examples** Ruijie#clear ipv6 pbr statistics

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 6.3 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
	<i>route-map</i>	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** The following examples send the packets with the source address 192.168.217.10 from the serial 2/0.

**Examples** 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
<b>access-list</b>	Defines the access list rule.
<b>route-map</b>	Defines the route map.
<b>set vrf</b>	Defines the VRF instance of the policy-based IP packet.
<b>set ip next-hop</b>	Defines the next hop of the policy-based routing.
<b>set ip default next-hop</b>	Defines the default next hop of the policy-based routing.
<b>set interface</b>	Defines the output port of the policy-based routing.
<b>set default interface</b>	Defines the default policy-based routing output port.
<b>set ip tos</b>	Sets the TOS in the head of the IP packet.
<b>set ip dscp</b>	Sets the DSCP of the IP packet.
<b>set ip precedence</b>	Sets the priority level in the head of the IP packet.
<b>match ip address</b>	Sets the filtering rule.
<b>match length</b>	Matches the packet length.

**Platform** N/A

**Description**

## 6.4 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 | redundancy }**


**no ip policy**

Parameter Description	Parameter	Description
	<b>load-balance   redundancy</b>	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**

N/A

**Description**

## 6.5 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
<i>route-map</i>	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 Commands

Command	Description
<b>access-list</b>	Defines the access list rule.
<b>route-map</b>	Defines the route map.
<b>set vrf</b>	Defines the VRF instance of the policy-based IP packet.
<b>set ip next-hop</b>	Defines the next hop of the policy-based routing.
<b>set ip default next-hop</b>	Defines the default next hop of the policy-based routing.
<b>set interface</b>	Defines the policy-based routing output port.
<b>set default interface</b>	Defines the default policy-based routing output port.
<b>set ip tos</b>	Sets the TOS in the head of the IP packet.
<b>set ip dscp</b>	Sets the DSCP of the IP packet.
<b>set ip precedence</b>	Sets the priority level in the head of the IP packet.
<b>match ip address</b>	Sets the filtering rule.
<b>match length</b>	Matches the packet length.

**Platform** N/A  
**Description**

## 6.6 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
<i>route-map-name</i>	Name of the router map applied locally, which is configured by the <b>router-map</b> 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 display 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
<b>match ipv6 address</b>	Sets the ACL6 used to match the IPv6 packets in the IPv6 PBR.
<b>match length</b>	Defines the length of matched packets.
<b>route-map</b>	Defines the route map for PBR.
<b>set default interface</b>	Defines the default next hop output port.
<b>set interface</b>	Defines the next hop output port.

<b>set ipv6 default next-hop</b>	Sets the default next hop of packet forwarding.
<b>set ipv6 next-hop</b>	Sets the next hop of packet forwarding.
<b>set ipv6 precedence</b>	Sets the priority field in the head of IPv6 packets.
<b>show ipv6 policy</b>	Displays the current PBR application.
<b>show route-map</b>	Displays the current router map configuration.

**Platform** N/A

**Description**

## 6.7 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 | redundancy }**

**no ipv6 policy**

**Parameter  
Description**

Parameter	Description
<b>load-balance</b>	Sets the policy as load balancing.
<b>redundance</b>	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** This function is valid for the multiple next-hops.

**Examples** 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
<b>set ipv6 default next-hop</b>	Defines the default next hop for forwarding the packets.
<b>set ipv6 next-hop</b>	Defines the next hop for forwarding the packets.
<b>show ipv6 policy</b>	Displays the current policy-based routing application.

**Platform** N/A  
**Description**

## 6.8 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  
Description**

Parameter	Description
<i>route-map-name</i>	Name of the PBR router map applied locally, which is configured by the <b>router-map</b> 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
<b>route-map</b>	Defines the route map.
<b>match ipv6 address</b>	Sets the IPv6 ACL used to match the IPv6 packets in the IPv6 PBR.
<b>set ipv6 default next-hop</b>	Defines the default next hop of the packet forwarding.
<b>set ipv6 next-hop</b>	Defines the next hop of the packet forwarding.
<b>show ipv6 policy</b>	Displays the current policy-based routing application.
<b>show route-map</b>	Displays the current route map configurations.

**Platform** N/A**Description**

## 6.9 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** The following example displays the correlation between the IPv4 policy router and BFD.**Examples**

```
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** N/A  
**Description**

## 6.10 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
<b>interface</b> <i>if-name</i>	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.
<b>local</b>	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** The following example displays the IPv4 PBR information on the interfaces.

**Examples**

```
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        : redundancy
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	<p>PBR flag bit:</p> <p>Route Type: "PBR" indicates PBR routes. "Normal" indicates common routes.</p> <p>Direct: PBR matching action, <b>permit</b> or <b>deny</b></p> <p>Priority: PBR priority, <b>High</b> or <b>Low</b></p> <p>Tos_Dscp: Displays whether the <b>tos</b> rule or the <b>dscp</b> rule is configured.</p> <p>Precedence: Displays whether the <b>set ip precedence</b> rule is configured.</p>
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** N/A  
**Description**

## 6.11 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
	<i>route-map-name</i>	The route-map name.

**Defaults** N/A

**Command  
Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the IPv4 PBR route-map information.

**Examples**

```
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** N/A  
**Description**

## 6.12 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
<b>interface</b> <i>if-name</i>	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.
<b>local</b>	Displays the IPv4 PBR forwarded packet count on the local interface.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the IPv4 PBR forwarded packet count.

**Examples**

```
Ruijie#show ip pbr statistics
IPv4 Policy-based route statistic
gigabitEthernet 0/1
statistics : 10
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 6.13 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
<i>route-map-name</i>	Indicates the name of a route map.

**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** The following example displays the current PBR configured in the system.

**Examples**

```
Ruijie#show ip policy
Banlance Mode: redundance
Interface      Route map
local          test
FastEthernet 0/0  test
```

**Related  
Commands**

Command	Description
<b>ip policy route-map</b>	Applies the policy-based routing on the interface.
<b>ip local policy route-map</b>	Applies the policy-based routing on the local interface.

**Platform** N/A

**Description**

## 6.14 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** The following example displays the correlation between the IPv6 policy router and BFD.

**Examples**

```
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

## 6.15 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
	<b>interface</b> <i>if-name</i>	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.
<b>local</b>	Displays the IPv6 PBR information on the local interface.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the IPv6 PBR information on the interfaces.

**Examples**

```
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, <b>permit</b> or <b>deny</b> Priority: PBR priority, <b>High</b> or <b>Low</b> Tos_Dscp: Displays whether the <b>tos</b> rule or the <b>dscp</b> rule is configured. Precedence: Displays whether the <b>set ip precedence</b> 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

## 6.16 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
<i>route-map-name</i>	The route-map name.

**Defaults**

N/A

**Command  
Mode**

Privileged EXEC mode

**Usage Guide**

N/A

**Configuration** The following example displays the IPv6 PBR route-map information.

**Examples**

```

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** N/A**Description**

## 6.17 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
<b>interface</b> <i>if-name</i>	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.
<b>local</b>	Displays the IPv6 PBR forwarded packet count on the local interface.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the IPv6 PBR forwarded packet count.

**Examples**

```
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

## 6.18 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
	<i>route-map-name</i>	Name of the PBR router map.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the current PBR applied in the system.

**Examples**

```
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
<b>show route-map</b>	Displays the current configured route map.

**Platform**

N/A

**Description**

## 7 VRF Commands

### 7.1 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
	<b>ipv4</b>	Enters IPv4 address family.
	<b>ipv6</b>	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
	<b>exit-address-family</b>	Exits the VRF address family configuration mode.
	<b>vrf definition</b>	Defines a multiprotocol VRF.

**Platform** N/A

**Description**

### 7.2 description

Use this command to configure the VRF description.

**description** *string*

Parameter Description	Parameter	Description

<i>string</i>	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
<b>ip vrf</b>	Defines a single-protocol IPv4 VRF.
<b>vrf definition</b>	Defines a multiprotocol VRF.

**Platform Description** N/A

## 7.3 exit-address-family

Use this command to exit VRF address family configuration mode.

**exit-address-family**

<b>Parameter Description</b>	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
<b>address-family</b>	Configures an IPv4 address family or IPv6 address family for a multiprotocol VRF.
<b>vrf definition</b>	Defines a multiprotocol VRF.

**Platform** N/A**Description**

## 7.4 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
<i>vrf-name</i>	VRF name

**Defaults** No VRF is configured by default.**Command  
mode** Global configuration mode**Usage Guide** N/A**Configuration** The following example creates a VRF.**Examples**

```
Ruijie(config)# ip vrf redvrf
Ruijie(config-vrf)#
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A**Description**

## 7.5 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
<i>vrf-name</i>	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

The following example adds an interface or sub-interface to a VRF.

### Examples

```
Ruijie(config-if-GigabitEthernet 0/0) # ip vrf forwarding redvrf
```

### Related Commands

Command	Description
N/A	N/A

### Platform

N/A

### Description

## 7.6 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
<i>vrf-name</i>	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
<b>ip vrf forwarding</b>	Adds the interface to a VRF.
<b>ip vrf</b>	Creates a VRF.
<b>set vrf</b>	Sets the VRF in the routing map configuration mode.

**Platform** N/A

**Description**

## 7.7 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**

Parameter	Description
-----------	-------------

<b>Description</b>		
	<i>limit</i>	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.
	<i>warn-threshold</i>	The warning will be printed when the threshold is reached. The threshold value is in the range from 1 to 100.
	<b>warning-only</b>	After the number of routes reaches <i>limit</i> , the warning will be printed but the routes will be added to the core routing table.
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Single-protocol VRF is configured in VRF configuration mode; multiple-protocol VRF is configured in address family mode.	
<b>Usage Guide</b>	This command is used to set the maximum number of routes for the VRF.	
<b>Configuration Examples</b>	The following example sets the maximum number of routes for vrf1 to 1,000, and enables the device to only print the warning. <pre>Ruijie(config)# ip vrf vrf1 Ruijie(config-vrf)# maximum routes 1000 warning-only</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	N/A	N/A
<b>Platform Description</b>	N/A	

## 7.8 vrf definition

Use this command to create the multiprotocol VRF.

**vrf definition** *vrf-name*

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<i>vrf-name</i>	VRF name, no more than 31 characters.
<b>Defaults</b>	N/A	
<b>Command mode</b>	Global configuration mode	
<b>Usage Guide</b>	The single-protocol VRF configuration command <b>ip vrf</b> cannot be used to edit a multiprotocol VRF; the multiprotocol VRF configuration command <b>vrf definition</b> cannot be used to edit a single-protocol	

IPv4 VRF.

**Configuration** The following example s creates a multiprotocol VRF *vrf1*.

**Examples**

```
Ruijie(config)#vrf definition vrf1
Ruijie(config-vrf)#
```

**Related  
Commands**

Command	Description
<b>description</b>	Configures the description.
<b>address-family</b>	Configures an IPv4 address family or IPv6 address family for a multiprotocol VRF.
<b>exit-address-family</b>	Exits the VRF address family configuration mode.
<b>vrf forwarding</b>	Binds a network interface to a multiprotocol VRF.

**Platform** N/A

**Description**

## 7.9 vrf forwarding

Use this command to bind a network interface to a multiprotocol VRF.

**vrf forwarding** *vrf-name*

**Parameter  
Description**

Parameter	Description
<i>vrf-name</i>	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** The following example binds the interface VLAN 1 to a multiprotocol VRF vrf1.

**Examples**

```
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
<b>vrf definition</b>	Defines a multiprotocol VRF.

**Platform** N/A  
**Description**

## 7.10 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
<i>vrf-name</i>	VRF name, which should be a multiprotocol VRF instead of a single-protocol IPv4 VRF.

**Defaults** N/A

**Command** Interface configuration mode

**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** The following example selects a VRF using IPv6 PBR on VLAN 1.

**Examples**

```
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
	<b>vrf definition</b>	Defines a multiprotocol VRF.
	<b>address-family</b>	Configures an IPv4 address family or IPv6 address family for a multiprotocol VRF.
	<b>set vrf</b>	Configures a VRF in the route map configuration mode.

Platform N/A

Description

## 7.11 show ip vrf

Use this command to display the VRF information.

**show ip vrf** [ **brief** | **detail** | **interfaces** ] [ *vrf-name* ]

Parameter Description	Parameter	Description
	<b>brief</b>	(Optional) Displays the VRF information in brief.
	<b>detail</b>	(Optional) Displays the VRF information in detail.
	<b>interfaces</b>	(Optional) Displays the VRF's interface information in detail.
	<i>vrf-name</i>	(Optional) Name of the VRF

**Defaults** All VRF information is displayed without parameter specified.

**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** The following example displays the VRF information.

**Examples**

```
Ruijie#show ip vrf
Name                Interfaces
aaa                 GigabitEthernet 0/0
                   GigabitEthernet 0/1
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 7.12 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** | **count** | **detail** ] [ *vrf-name* ]

**Parameter  
Description**

Parameter	Description
<b>ipv4</b>	Displays the brief VRF (the single-protocol VRF) information of the IPv4 address family.
<b>ipv6</b>	Displays the VRF brief information of the IPv6 address family.
<b>brief</b>	Displays the brief VRF (including the single-protocol VRF and the multiple-protocol) information.
<b>detail</b>	Displays the detailed VRF (including the single-protocol VRF and the multiple-protocol) information.
<i>vrf-name</i>	VRF name.

**Defaults** N/A

**Command mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays brief information about all VRF.

**Examples**

```
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



## 8 RIPng Commands

### 8.1 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** The following example clears the RIPng routes:

#### Examples

```
Ruijie# clear ipv6 rip
```

#### Related Commands

Command	Description
N/A	N/A

#### Platform Description

N/A

## 8.2 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
<i>metric</i>	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

The default value is 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 shows how to set the RIPng metric value as 3 when redistributing OSPF process 100:

```
Ruijie(config-router)# default-metric 3
Ruijie(config-router)# redistribute ospf 100
```

### Related Commands

Command	Description
<b>redistribute</b>	Redistributes the route from one route domain to another route domain.

**Platform** N/A

**Description**

## 8.3 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
	<i>distance</i>	Sets the RIPng administrative distance. The range is from 1 to 254.

**Defaults** The default distance is 120

**Command mode** Routing process configuration mode.

**Usage Guide** N/A

**Configuration** The following example shows how to set the RIPng administrative distance as 160:

**Examples**

```
Ruijie(config)# ipv6 router rip
Ruijie(config-router)# distance 160
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 8.4 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
<b>prefix-list</b> <i>prefix-list-name</i>	Name of the prefix list which is used to filter the route.
<b>in</b>   <b>out</b>	Filters the in or out route in the distribute list.
<i>interface-type</i> <i>interface-name</i>	(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 shows how to filter 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
---------	-------------

<b>redistribute</b>	Sets route redistribution.
---------------------	----------------------------

**Platform** N/A

**Description**

## 8.5 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
	<b>only</b>	Advertises the IPv6 default route only.
	<b>originate</b>	Advertises both of the IPv6 default route and other routes.
	<b>metric</b> <i>metric-value</i>	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 shows how to create 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
<b>show ipv6 rip</b>	Displays the RIPng process and statistics.
<b>show ipv6 rip database</b>	Displays the RIPng route.

**Platform** N/A**Description**

## 8.6 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** It is disabled by default.**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 shows how to enable 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** N/A  
**Description**

## 8.7 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
	<i>value</i>	Sets the interface metric value on the interface. The valid range is from 1 to 16.

**Defaults** The default value is 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 shows how to set 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** N/A  
**Description**

## 8.8 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 shows how to create 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** N/A**Description**

## 8.9 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
<b>default</b>	Enables the passive mode on all interfaces.
<i>interface-type interface-num</i>	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 shows how to enable 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****Command****Description**

## Commands

N/A	N/A

Platform N/A

Description

## 8.10 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
<b>bgp</b>	Redistributes the BGP routes to RIPng.
<b>connected</b>	Redistributes the connected routes to RIPng.
<b>isis</b> [ <i>area-tag</i> ]	Redistributes the ISIS routes to RIPng. <i>area-tag</i> indicates the ISIS process number.
<b>ospf</b> <i>process-id</i>	Redistributes the OSPF routes to RIPng. <i>process-id</i> indicates the OSPF process number, and the range is from 1 to 65,535.
<b>static</b>	Redistributes the static routes to RIPng.
<b>metric</b> <i>metric-value</i>	(Optional) Sets the metric value for the route redistributed to RIPng.
<b>route-map</b> <i>route-map-name</i>	(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** Routing process configuration mode.  
**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 shows how to redistribute 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
<b>default-metric</b>	Defines the default RIPng metric value when redistributing other routing protocols.
<b>distribute-list</b>	Filters the RIPng routing update packets.

**Platform** N/A  
**Description**

## 8.11 show ipv6 rip

Use this command to show the parameters and each statistical information of the RIPng routing protocol process.

**show ipv6 rip**

**Parameter**

Parameter	Description
-----------	-------------

<b>Description</b>		
	N/A	N/A

**Defaults** N/A

**Command mode** Privileged EXEC mode or user 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
```

<b>Related Commands</b>	Command	Description
	<b>show ipv6 rip</b>	Displays the parameters and each statistical information of the RIPng process.

**Platform** N/A

**Description**

## 8.12 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 or user 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** N/A  
**Description**

## 8.13 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
	<b>poisoned-reverse</b>	(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** The following example shows how to disable the RIPng horizontal split:

**Examples**

```
Ruijie(config)# ipv6 router rip
Ruijie(config-router)# no split-horizon
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform**

N/A

**Description**

## 8.14 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
<i>update</i>	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.
<i>invalid</i>	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.
<i>flush</i>	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 shows how to send 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
<b>show ipv6 rip</b>	Displays the parameters and the statistical information of the RIPng process.
<b>show ipv6 rip database</b>	Displays the RIPng routes.

**Platform Description** N/A



## 9 NSM Commands

### 9.1 clear ip route

Use this command to clear the route cache.

**clear ip route** [ **vrf** *vrf\_name* ] { \* | **network** [ *netmask* ] | }

Parameter Description	Parameter	Description
	<b>vrf</b> <i>vrf_name</i>	(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.
	<b>network</b>	Specifies the route cache of the network or subnet.
	<i>netmask</i>	(Optional) Subnet mask. If no subnet mask is specified, the longest match principle is used when you match <i>network</i> with the route. The cache of the longest match is cleared.

#### Command

**Mode** Privileged EXEC mode

**Usage** Clearing route cache clears the corresponding routes and triggers the routing protocol relearning.

**Guide** 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**

### 9.2 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	Parameter	Description
Description	<i>ip-address</i>	IPv4 address of the default gateway

**Defaults** No gateway IP address is configured by default.

#### Command

**Mode** Global configuration mode

**Usage** 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	Command	Description
Commands	N/A	N/A

#### Platform

**Description** This command is supported on 2-layer devices.

## 9.3 ip default-network

Use this command to configure the default network globally. Use the **no** or **default** form of this command to restore the default setting.

**ip default-network** *network*

**no ip default-network** *network*

**default ip default-network** *network*

Parameter	Parameter	Description
Description	<i>network</i>	Default network

**Defaults** The default is 0.0.0.0/0.

#### Command

**Mode** Global configuration mode

#### Usage

**Guide** 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.

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.

**Examples**

```
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
<b>show ip route</b>	Displays the routing table.

## 9.4 ip fast-reroute 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* ] **route-map**

**Parameter****Description**

Parameter	Description
<b>vrf</b> <i>vrf-name</i>	VRF
<b>route-map</b> <i>route-map-name</i>	Route map
<b>static</b>	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-nexthop GigabitEthernet 0/1
192.168.1.2
Ruijie(config-route-map)# exit
Ruijie(config)# ip fast-reroute static route-map fast-reroute
```

Related	Command	Description
command	<b>fast-reroute</b>	Configures OSPF fast reroute.

## Platform

## Description

## 9.5 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* } ] [ **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* ]

**default ip route** [ **vrf** *vrf\_name* ] **all**

Parameter  
Description

Parameter	Description
<b>vrf</b> <i>vrf_name</i>	Name of the VRF, which can be the single protocol IPv4 VRF or configured IPv4 address family multi-protocol VRF.
<b>network</b>	Network address of the destination
<b>net-mask</b>	Mask of the destination
<b>ip-address</b>	The next hop IP address of the static route
<b>interface</b>	(Optional) The next hop egress of the static route
<b>distance</b>	(Optional) The administrative distance of the static route
<b>tag</b>	(Optional) The tag of the static route
<b>permanent</b>	(Optional) Permanent route ID
<b>track</b> <i>object-number</i>	(Optional) Indicates correlation with Track. <i>object-number</i> indicates the ID of the track object. By default, the static route is not correlated with the Track function.
<b>weight</b> <i>number</i>	(Optional) Indicates the weight of the static route. The weight is 1 by default.
<b>description</b> <i>description-text</i>	(Optional) Indicates the description of the static route. By default, no description is configured. <i>description-text</i> is a string of one to 60 characters.
<b>disabled/enabled</b>	(Optional) Indicates the enable flag of the static route. The flag is enabled by default.
<b>global</b>	(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 <i>vrf name</i> .

**Defaults** No static route is configured by default.

**Command Mode** Global configuration mode

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.

#### Usage Guide

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.

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
```

#### Examples

If the static route has not a specific interface, data flows may be sent through other interface in case of interface failure. The following example configures data flows to be sent through fastethernet 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**

## 9.6 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* ]

Use this command to correlate the static route with BFD. Use the **no** or **default** form of this command to restore the default setting.

Parameter	Description
<b>vrf</b> <i>vrf-name</i>	(Optional) Specifies the VRF name of the static route. By default, it is global VRF.
<i>interface-type interface-number</i>	Interface type and interface number.
<b>gateway</b>	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.
<b>source</b> <i>ip-address</i>	(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.

**Defaults** The static address is not correlated with BFD by default.

**Command Mode** Global configuration mode

**Usage Guide**  Please make sure the BFD session parameters have been configured before executing this command.

The following example correlates the static route with BFD, and detects the reachability of path to the neighbor 172.16.0.2.

### Examples

```
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**

## 9.7 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**

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.

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** This function is enabled by default.

**Command Mode** Global configuration mode

**Usage Guide** 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**

## 9.8 ip routing

Use this command to enable IP routing in the global configuration mode. Use the **no** or **default** form of this command to disable this function.

**ip routing**

**no ip routing**

**default ip routing**

**Defaults** This function is enabled by default.

**Command Mode** Global configuration mode

**Usage Guide**

IP routing is not necessary when the switch serves as bridge or VoIP gateway. When a device functions only as a bridge or VoIP gateway, the IP routing function of the RGOS software is not required. In this case, the IP routing function of the RGOS software can be disabled. After the IP routing function is disabled, the device functions as a common host. The device can send and receive packets but cannot forward packets. All route-related configurations will be deleted except the static route configuration. A large number of static routes may be configured. If a user runs the **no ip routing** command, the configuration of a large number of static routes may be lost. To prevent this situation, the static route configuration will be hidden temporarily when the **no ip routing** command is run. If the **ip routing** command is run again, the static route configuration can be restored.

Note that if the process or whole system restarts when the **no ip routing** command is run, the static route configuration will not be reserved.

**Examples** The following example disables IP routing.

```
Ruijie(config)# no ip routing
```

**Related Commands** N/A

**Platform Description**

## 9.9 ip 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.

**ip static route-limit** *number*

**no ip static route-limit** *number*

**default ip static route-limit**



Parameter Description	Parameter	Description
	<i>number</i>	Upper threshold of static routes in the range from 1 to 10000
Defaults	The default is 1024.	
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 <b>show running-config</b> command.	
Examples	The following example sets the upper threshold of the static routes to 900 and then restores the setting to the default value.	
	<pre>ip static route-limit 900</pre>	
Related Commands	N/A	
Platform Description		

## 9.10 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
	<i>ipv6-address</i>	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 <b>show ipv6 redirects</b> 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** This command is not supported on 2-layer devices or 3-layer devices configured with the **no ip routing** command.

**Description**

## 9.11 ipv6 route

Use this command to configure an ipv6 static route. Use the **no** or **default** 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* ] [ **description** *description-text* ]

**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* ]

**no ipv6 route** [ **vrf** *vrf\_name* ] **all**

**Parameter  
Description**

Parameter	Description
<b>vrf</b> <i>vrf-name</i>	Name of VRF, which must be the configured IPv6 address family multi-protocol VRF
<i>prefix-length</i>	Mask length of the destination
<i>ipv6-address</i>	The next hop IP address of the static route
<i>interface</i>	(Optional) The next hop egress of the static route
<b>nexthop-vrf</b> <i>vrf-name1</i>	(Optional) VRF the nexthop belongs, which must be the configured IPv6 address family multi-protocol VRF.
<i>distance</i>	(Optional) The administrative distance of the static route. The default is 1.
<i>tag</i>	(Optional) The tag value of the static route. The default is 0.
<b>weight</b> <i>number</i>	(Optional) Indicates the weight of the static route, which must be specified when you configure equal-cost routes. The weight ranges from 1 to 8. When the weights of all equal-cost routes of a route are summed up, the sum cannot exceed the maximum number of equal-cost routes that can be configured for the route. Weighting of equal-cost routes of a route indicates the traffic ratio of these routes. The weight is 1 by default.
<b>description</b> <i>description-text</i>	(Optional) Indicates the description of the static route. By default, no description is configured. <i>description-text</i> is a string of one to 60 characters.

**Defaults** No IPv6 static route is configured by default.

**Command  
Mode** Global configuration mode

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.

**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.

The following example adds a static route to the destination network of 2001::/64 whose next hop is 2002::2 and administrative distance are 115.

```
ipv6 route 2001::/64 2002::2 115
```

**Examples** If the static route has not a specific interface, data flows may be sent through other interface in case of interface failure. The following example configures that data flows are sent through fastethernet 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**

## 9.12 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
<b>vrf</b> <i>vrf-name</i>	(Optional) Specifies the VRF name of the static route. By default, it is global VRF,
<i>interface-type interface-number</i>	Interface type and interface number.
<i>gateway</i>	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.
<b>source</b> <i>ipv6-address</i>	(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.
--	--

**Defaults** The static route is not associated with BFD by default.

**Command Mode** Global configuration mode

**Usage Guide**  Please make sure the BFD session parameters have been configured before executing this command.

The following example correlates the static route with BFD, and detects the reachability of path to the neighbor `2001:1::2`.

#### Examples

```
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**

## 9.13 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*

**no ipv6 static route-limit** *number*

**default ipv6 static route-limit**

Parameter	Parameter	Description
Description	<i>number</i>	Upper threshold of static routes in the range from 1 to 10000.

**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 ipv6 static routes to 900 and then restores the setting to the default value.

```
Ruijie# ipv6 static route-limit 900
Ruijie# no ipv6 static route-limit
```

**Related  
Commands**

Command	Description
ipv6 route	Configures the IPv6 static route.
show ipv6 route	Displays the IPv6 routing table.

**Platform****Description**

## 9.14 ipv6 unicast-routing

Use this command to enable the IPv6 route function of the RGOS. Use the **no** or **default** form of this command to disable this function.

**ipv6 unicast-routing**

**no ipv6 unicast-routing**

**default ipv6 unicast-routing**

**Parameter****Description**

N/A

**Defaults**

This function is enabled by default.

**Command****Mode**

Global configuration mode

**Usage Guide**

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.

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**Platform****Description**

## 9.15 maximum-paths

Use this command to specify the number of equivalent routes. Use the **no** or **default** form of this command is used to restore the default setting.

**maximum-paths** *number*

**no maximum-paths** *number*

**default maximum-paths**

Parameter	Parameter	Description
Description	<i>number</i>	Number of equivalent routes in the range from 1 to 64

**Defaults** N/A

**Command**

**Mode** Global configuration mode

**Usage Guide**

The number of equivalent routes is configured to control the number of equivalent routes. After the number of equivalent routes is configured by running the **maximum-paths** command, the number of load-sharing channels in load-sharing mode will not exceed the number of configured static routes.

You can run the **show running config** command to query the number of configured static routes.

This command takes effect both to IPv4 and IPv6 addresses. After this command is configured, the maximum number of equivalent routes to an IPv4 or IPv6 destination is equal to the configured value.

**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
```

## 9.16 show ip route

Use the commands 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	Parameter	Description
-----------	-----------	-------------

<b>vrf</b> <i>vrf_name</i>	(Optional) Displays the route information of the VRF.
<i>network</i>	(Optional) Displays the route information to the network.
<i>mask</i>	(Optional) Displays the route information to the network of this mask.
<b>longer-prefix</b>	(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)
<i>protocol</i>	(Optional) Displays the route information of specific protocol.
<i>process-id</i>	(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.

**Defaults** 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

This command can display route information flexibly.

**Usage Guide** This command shows all routes. To show different attributes of routes, specify normal | ecmp | fast-reroute.

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, * - 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.
```

## Examples

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
```

```
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
```

## 9.17 show ip route static bfd

Use this command to display the IP route correlated BFD information

**show ip route [ [ vrf vrf\_name ] static bfd**

Use this command to display the IP route correlated BFD information

**show ip route [ [ vrf vrf\_name ] static bfd**

Parameter	Parameter	Description
Description	vrf vrf-name	(Optional) Displays route information of the specified VRF. The default is global VRF.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** Use this command to display the IP route correlated BFD information

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
```

### Examples

Field	Description
S	Static route
BFD state	State of the static route correlated BFD.

**Related Commands** N/A

Platform

Description

# 9.18 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	Parameter	Description
Description	<i>vrf-name</i>	VRF name
Defaults	N/A	
Command		
Mode	Privileged EXEC mode	
Usage		
guideline	N/A	

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
          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
          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
          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
```

## Examples

```

VRF1
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

```

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	Number of entries (based on prefix, not next-hop)
Connected	Protocol type. Value: Connected: direct connection; Static: static; RIP: RIP; OSPF: OSPF; ISIS: ISIS; BGP: BGP; TOTAL: total

## 9.19 show ip route track-table

Use this command to display the IP route correlated Track information.

**show ip route [ [ vrf vrf\_name ] track-table**

Use this command to display the IP route correlated Track information.

**show ip route [ [ vrf vrf\_name ] track-table**

Parameter	Parameter	Description
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.

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]
```

**Examples**

:

Field	Description
track	Track target index
state	Track target state

**Related Commands**

Command	Description
N/A	N/A

**Platform Description**

## 9.20 show ipv6 route

Use the command to display the configuration of the IPv6 routing table.

**show ipv6 route** [ [ **vrf** *vrf\_name* ] [ *ipv6-prefix / prefix-length* [ **longer-prefixes** ] ] *protocol* [ *process-id* ] | **weight** ] ]

Use the command to display the configuration of the IPv6 routing table.

**show ipv6 route** [ [ **vrf** *vrf\_name* ] [ *ipv6-prefix / prefix-length* [ **longer-prefixes** ] ] *protocol* [ *process-id* ] | **weight** ] ]

**Parameter Description**

Parameter	Description
<b>vrf</b> <i>vrf-name</i>	(Optional) Specifies a VRF.
<i>ipv6-prefix/prefix-length</i>	(Optional) Specifies a prefix for route's IPv6 address.
<b>longer-prefixes</b>	(Optional) Displays the route with an IPv6 address prefix mostly matched.
<i>protocol</i>	((Optional) Displays the route information of specific protocol.
<i>process-id</i>	(Optional) Specifies a route process ID.
<b>weight</b>	(Optional) Displays the non-default-weight routes only.

**Defaults** All routes are displayed by default.

**Command****Mode** Privileged EXEC mode**Usage Guide** Use this command to display route information.

The following example displays the IPv6 routing table.

```
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
```

**Examples**

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	Command	Description
Commands	<b>ipv6 route</b>	Configures the IPv6 static route.

**Platform****Description**

## 9.21 show ip route static bfd

Use this command to display the IPv6 route correlated BFD information

**show ipv6 route [ [ vrf vrf\_name ] static bfd**

Use this command to display the IPv6 route correlated BFD information

**show ipv6 route [ [ vrf vrf\_name ] static bfd**

Parameter	Description
<b>Description</b> vrf vrf-name	(Optional) Displays the route information of the designated VRF name of the static route. The default is global VRF,

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** Use this command to display the IPv6 route correlated BFD information.

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
```

**Examples**

Field	Description
S	Static route
BFD state	State of the static route associated BFD

**Related Commands** N/A

**Platform****Description**



## 9.22 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
<b>Parameter</b>	
<b>Description</b>	(Optional) VRF name. If no VRF name is specified, statistics of the IPv6 routing table of the global VRF are displayed. .
<b>Defaults</b>	N/A
<b>Command</b>	
<b>Mode</b>	Privileged EXEC mode
<b>Usage Guide</b>	N/A

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
```

**Examples** 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 summaries.

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

## 10 Protocol-independent Commands

### 10.1 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	Parameter	Description
description	<i>start-time</i>	Start time of the lifetime. The syntax is as follows: <i>hh:mm:ss month date year</i> <i>hh:mm:ss date month year</i> <ul style="list-style-type: none"><li>● hh—hour</li><li>● mm—minute</li><li>● ss—second</li><li>● month—month</li><li>● date—day</li><li>● year—year</li></ul> The default start time is Jun 1, 1993, which is also the earliest start time available.
	<b>infinite</b>	Indicates that the encryption key is valid for ever.
	<i>end-time</i>	<i>End time of the encryption key. It must be later than the start time.</i>
	<b>duration seconds</b>	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	Description
---------	---------	-------------

<b>command</b>	-	-
----------------	---	---

**Platform** -  
**description**

## 10.2 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* ]

<b>Parameter</b> <b>description</b>	Parameter	Description
	<i>path-list-num</i>	Specifies the AS-path access-list number. The range is from 1 to 500.
	<b>permit</b>	Permits advertisement based on matching conditions.
	<b>deny</b>	Denies advertisement based on matching conditions.
	<i>regular-expression</i>	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$
```

<b>Related command</b>	Command	Description
	-	-

**Platform** -  
**description**

## 10.3 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 } ]  
ip community-list { community-list-number | expanded community-list-name } { permit | deny }  
[ regular-expression ]
```

Parameter description	Parameter	Description
	<i>community-list-name</i>	Name of the community list.
	<b>standard</b>	Indicates standard community list numbered in 1 to 99.
	<b>expanded</b>	Indicates expanded community list numbered in 100 to 199.
	<b>permit</b>	Permits access to the community list.
	<b>deny</b>	Denies access to the community list.
	<i>community-number</i>	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.

**Default configuration**      None

**Command mode**            Global configuration 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.

## 10.4 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* ]

Parameter description	Parameter	Description
	<i>expand-list</i>	Indicates an extended extcommunity list, ranging from 100 to 199. One extcommunity list may contain multiple rules.
	<i>standard-list</i>	Indicates a standard extcommunity list, ranging from 1 to 99. One extcommunity list may contain multiple rules.
	<b>expanded</b> <i>list-name</i>	Indicates the name of an extended extcommunity, comprising not more than 32 characters. When using this parameter, you enter the extcommunity list configuration mode.
	<b>standard</b> <i>list-name</i>	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.
	<b>permit</b>	Defines an extcommunity rule for permitting.
	<b>deny</b>	Defines an extcommunity rule for denying.
	<i>regular-expression</i>	(optional) Defines a matching template that is used to match an extcommunity.
	<i>sequence-number</i>	(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.
	<b>rt</b>	(Optional) Sets the RT attribute value. This command can be used only for the standard extcommunity configuration, but not for the extended extcommunity configuration.
	<b>soo</b>	(Optional) Sets the SOO attribute value. This command can be used only for the standard extcommunity configuration, but not for the extended extcommunity configuration.
	<i>value</i>	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
```

## 10.5 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
<i>prefix-list-name</i>	Name of the prefix list
<i>seq-number</i>	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.
<i>ip-prefix</i>	Network address and mask. Network address can be any valid IP address and the mask length is in the range of 0 to 32.
<i>minimum-prefix-length</i>	(Optional) Minimum length of the prefix (the starting length) Note: “ge” indicates the operation of “larger than” and “equivalent to”.
<i>maximum-prefix-length</i>	(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
```

## 10.6 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
<i>prefix-list-name</i>	Name of the prefix list
<i>description-text</i>	Description of the prefix list

**Default**

**configuration**    No description is added for a prefix list, by default.

**Command**

**mode**            Global configuration mode



The example below adds the description for the prefix list:

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# ip prefix-list pre description Deny routes from Net-A
```

## 10.7 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**

Disabled

**description****Default**

**configuration** No sequence number is added for a prefix list, by default.

**Command**

**mode** Global configuration mode

The example below adds a sequence number for the prefix list:

**Examples**

```
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

## 10.8 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**

Parameter	Description
-----------	-------------

<i>prefix-list-name</i>	Name of the prefix list
<i>seq-number</i>	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.
<i>ipv6-prefix</i>	Network address and its mask. The network address can be any valid IP address. The mask can be 0 to 32 characters.
<i>minimum-prefix-length</i>	(Optional) Minimum length of the prefix (the starting length) Note: “ge” indicates the operation of “larger than” and “equivalent to”.
<i>maximum-prefix-length</i>	(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
```

## 10.9 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	Parameter	Description
	<i>prefix-lis-name</i>	Name of the ipv6 prefix list
	<i>description-text</i>	Description of the ipv6 prefix list

#### Default

**configuration** No description is added for an IPv6 prefix list, by default.

#### Command

**mode** Global configuration mode

The example below adds the description for the prefix list:

**Examples**

```
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.

## 10.10 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

The example below adds a sequence number for the prefix list:

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# ipv6 prefix-list pre description Deny routes from Net-A
```

Related	Command	Description

commands	ipv6 prefix-list	Configure the IPv6 prefix list.
----------	------------------	---------------------------------

## 10.11 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	Parameter	Description
description	<i>key-id</i>	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** -

## 10.12 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	Parameter	Description
description	<i>key-chain-name</i>	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** -

## 10.13 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.
	<i>text</i>	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** -

## 10.14 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
<i>as-path-acl-list-num</i>	ACL number, in the range of 1 to 500.
<i>access-list-name</i>	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

```
Ruijie(config)# route-map ROUTEMAP2IBGP
Ruijie(config-route-map)# match as-path 20 30
```

### Related commands

Command	Description
<b>match community</b>	Match the community.
<b>match metric</b>	Match the metric.
<b>match origin</b>	Match the source of routes.
<b>set as-path prepend</b>	Set the AS_PATH attribute of redistributed routes
<b>set metric</b>	Set the metric.
<b>set metric-type</b>	Set the metric type.

## 10.15 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	<b><i>community-list-number</i></b>	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
	<b><i>communitys-list-name</i></b>	Name of the community list in the range of less than 80 characters
	<b>exact-match</b>	Match the community list exactly.

**Default configuration**      None.

**Command mode**              Route map configuration mode.

**Usage**                      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.

**guidelines**                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**

```
Ruijie(config)# ip community-list 1 permit 100:2 100:30
Ruijie(config)# route-map set_lopref
Ruijie(config-route-map)# match community 1 exact-match
Ruijie(config-route-map)# set local-preference 20
```

	Command	Description
Related commands	<b>match as-path</b>	Match the AS_PATH attribute.
	<b>match metric</b>	Match the metric.
	<b>match origin</b>	Match the source.
	<b>set as-path prepend</b>	Set the AS_PATH attribute.
	<b>set metric</b>	Set the metric.
	<b>set metric-type</b>	Set the metric type.

## 10.16 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	Parameter	Description
-----------	-----------	-------------

<b>description</b>	<i>standard-list-number</i>	Standard extcommunity list number, ranging from 1 to 99. An extcommunity list may contains multiple excommunity values.
	<i>standard-list-name</i>	Standard excommunity name. An extcommunity list may contains multiple excommunity values.
	<i>expanded-list-num</i>	Expanded extcommunity list number, ranging from 100 to 199. An extcommunity list may contains multiple excommunity values.
	<i>expanded-list-name</i>	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** There are the following scenarios for a route map with an extcommunity:

**guideline** 1. The route map associated with **import map** uses the RT attribute to filter imported VRF routes.

**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
```

<b>Related command</b>	Command	Description
	<b>ip extcommunity-list</b>	Create an extcommunity list.
	<b>show ip extcommunity-list</b>	Show an extcommunity list.

**Platform description** -

## 10.17 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]*]

<b>Parameter description</b>	Parameter	Description
	<i>interface-type</i>	Interface type
	<i>interface-number</i>	Interface number



**Default**

**configuration** None.

**Command**

**mode** Route map configuration mode.

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.

**Usage****guidelines**

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.

The following example redistributes the RIP route with the next hop of fastethernet 0/0 in the OSPF routing protocol.

**Examples**

```
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
<b>match ip address</b>	Match the address in the access list.
<b>match ip next-hop</b>	Match the next-hop IP address in the access list.
<b>match ip route-source</b>	Match the source IP address in the access list.
<b>match metric</b>	Match the metric.
<b>match route-type</b>	Match the route type.
<b>match tag</b>	Match the tag.
<b>set metric</b>	Set the metric.
<b>set metric-type</b>	Set the metric type.
<b>set tag</b>	Set the tag.

## 10.18 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
<i>access-list-number</i>	Number of the access list
<i>access-list-name</i>	Name of the access list
<i>prefix-list prefix-list-name</i>	Specify the prefix list to match.

**Default configuration** None.

**Command mode** Route map configuration mode.

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.

**Usage guidelines**

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.

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.

**Examples**

```
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
<b>access-list</b>	Set the access list.
<b>match interface</b>	Match the next-hop interface of the route.
<b>match ip next-hop</b>	Match the next-hop address in the access list.
<b>match ip route-source</b>	Match the route source address in the access list.
<b>match metric</b>	Match the metric.
<b>match route-type</b>	Match the route type.
<b>match tag</b>	Match the tag.
<b>set metric</b>	Set the metric.
<b>set metric-type</b>	Set the metric type.
<b>set tag</b>	Set the tag.

## 10.19 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
<i>access-list-number</i>	Number of the access list
<i>access-list-name</i>	Name of the access list
<i>prefix-list prefix-list-name</i>	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.

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.

### Examples

```
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
<b>access-list</b>	Set the access list.
<b>match ip address</b>	Match the IP address in the access list.
<b>match interface</b>	Match the next-hop interface of the route.
<b>match ip route-source</b>	Match the route source address in the access list.
<b>match metric</b>	Match the metric.
<b>match route-type</b>	Match the route type.
<b>match tag</b>	Match the tag.
<b>set metric</b>	Set the metric.
<b>set metric-type</b>	Set the metric type.
<b>set tag</b>	Set the tag.

## 10.20 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
<i>access-list-number</i>	Number of the access list
<i>access-list-name</i>	Name of the access list
<i>prefix-list prefix-list-name</i>	Specify the prefix list to match.

**Default****configuration** None.**Command****mode** Route map configuration mode.

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.

**Usage****guidelines**

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.

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.

**Examples**

```
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
<b>access-list</b>	Set the access list.
<b>match ip address</b>	Match the IP address in the access list.
<b>match interface</b>	Match the next-hop interface of the route.
<b>match ip next-hop</b>	Match the next-hop IP address in the access list.
<b>match metric</b>	Match the metric.
<b>match route-type</b>	Match the route type.
<b>match tag</b>	Match the tag.
<b>set metric</b>	Set the metric.
<b>set metric-type</b>	Set the metric type.
<b>set tag</b>	Set the tag.

## 10.21 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
	<i>access-list-name</i>	Name of the access list.
	<b>prefix-list</b> <i>prefix-list-name</i>	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.

The following example enables the OSPF routing protocol to redistribute RIP routes that match access list v6acl, with the default metric being 30.

### Examples

```
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
	<b>ipv6 access-list</b>	Set the IPV6 access list.

<b>match interface</b>	Match the next-hop interface of the route.
<b>match ipv6 next-hop</b>	Match the next-hop address in the IPv6 access list.
<b>match ipvr route-source</b>	Match the route source address in the IPv6 access list.
<b>match metric</b>	Match the route metric.
<b>match route-type</b>	Match the route type.
<b>match tag</b>	Match the route tag.
<b>set metric</b>	Set the metric for route redistribution.
<b>set metric-type</b>	Set the type for route redistribution.
<b>set tag</b>	Set the tag for route redistribution.

## 10.22 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
	<i>access-list-name</i>	Name of the IPv6 access list.
	<i>prefix-list prefix-list-name</i>	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
<b>ipv6 access-list</b>	Set the IPV6 access list.
<b>match interface</b>	Match the next-hop interface of the route.
<b>match ipv6 address</b>	Match the IP address in the IPV6 access list.
<b>match ipv6 route-source</b>	Match the route source address in the IPV6 access list.
<b>match metric</b>	Match the route metric.
<b>match route-type</b>	Match the route type.
<b>match tag</b>	Match the route tag.
<b>set metric</b>	Set the metric for route redistribution.
<b>set metric-type</b>	Set the type for route redistribution.
<b>set tag</b>	Set the tag for route redistribution.

## 10.23 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
<i>access-list-name</i>	Name of the IPv6 access list.
<i>prefix-list prefix-list-name</i>	Specify the IPv6 prefix list to match.

**Default  
configuration**    None



**Command**

**mode** Route map configuration mode

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.

**Usage****guideline**

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.

The following example enables the OSPF routing protocol to redistribute RIP routes that only match access list v6acl, with the default metric being 50.

**Examples**

```
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
<b>ipv6 access-list</b>	Set the IPV6 access list.
<b>match interface</b>	Match the next-hop interface of the route.
<b>match ipv6 address</b>	Match the IP address in the IPv6 access list.
<b>match ipv6 next-hop</b>	Match the next hop in the IPv6 access list.
<b>match metric</b>	Match the route metric.
<b>match route-type</b>	Match the route type.
<b>match tag</b>	Match the route tag.
<b>set metric</b>	Set the metric for route redistribution.
<b>set metric-type</b>	Set the type for route redistribution.
<b>set tag</b>	Set the tag for route redistribution.

## 10.24 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	Parameter	Description
description	<i>metric</i>	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.

In the example below, the OSPF routing protocol redistributes the RIP routes of metric 10.

### Examples

```
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
<b>access-list</b>	Set the access list.
<b>match ip address</b>	Match the IP address.
<b>match interface</b>	Match the interface.
<b>match ip next-hop</b>	Match the next-hop IP address.
<b>match ip route-source</b>	Match the source IP address.
<b>match route-type</b>	Match the route type.
<b>match tag</b>	Match the tag.
<b>set metric</b>	Set the metric.

<b>set metric-type</b>	Set the metric type.
<b>set tag</b>	Set the tag.

## 10.25 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
<b>Parameter</b> <b>description</b>	<b>egp</b>	Redistribute the routes from the remote EGP.
	<b>igp</b>	Redistribute the routes from the local IGP.
	<b>incomplete</b>	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
```

<b>Related</b> <b>commands</b>	Command	Description
	<b>match as-path</b>	Match the AS_PATH attribute.
	<b>match metric</b>	Match the metric.
	<b>match origin</b>	Match the source.
	<b>set as-path prepend</b>	Set the AS_PATH attribute.
	<b>set metric</b>	Set the metric.
	<b>set origin</b>	Set the source.

## 10.26 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** | **evpn-type-1** | **evpn-type-2** | **evpn-type-3** | **evpn-type-4** | **evpn-type-5** }

**no match route-type** [ **static** | **connect** | **rip** | **local** | **internal** | **external** [ **type-1** | **type-2** ] | **level-1** | **level-2** | **evpn-type-1** | **evpn-type-2** | **evpn-type-3** | **evpn-type-4** | **evpn-type-5** ]

### Parameter description

Parameter	Description
<b>local</b>	Indicates the local route type.
<b>static</b>	Indicates the static route type.
<b>connect</b>	Indicates the directly connected route type.
<b>rip</b>	Indicates the RIP route type.
<b>internal</b>	Indicates the OSPF internal route type.
<b>external</b>	Indicates the OSPF external route type.
<b>type-1</b>   <b>type-2</b>	Indicates the OSPF type-1 or type-2 route type.
<b>level-1</b>   <b>level-2</b>	Indicates the ISIS level-1 or level-2 route type.
<b>evpn-type-1</b>   <b>evpn-type-2</b>   <b>evpn-type-3</b>   <b>evpn-type-4</b>   <b>evpn-type-5</b>	Indicates the 5 routes types of BGP EVPN.

### 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
<b>access-list</b>	Set the access list.
<b>match ip address</b>	Match the IP address.
<b>match interface</b>	Match the interface.
<b>match ip next-hop</b>	Match the next-hop IP address.
<b>match ip route-source</b>	Match the source IP address.
<b>match metric</b>	Match the metric.
<b>match tag</b>	Match the tag.
<b>set metric</b>	Set the metric.
<b>set metric-type</b>	Set the access list.
<b>set tag</b>	Match the IP address.

## 10.27 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
<i>tag</i>	Route tag

**Default  
configuration**    None

**Command  
mode**            Route map configuration mode

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.

#### Usage

#### guideline

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 routes with tag 50 and 80 in the OSPF routing domain.

#### Examples

```
Ruijie(config)# router rip
Ruijie(config-router)# redistribute ospf 100 route-map redrip
Ruijie(config-router)# network 192.168.12.0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match tag 50 80
```

#### Related commands

Command	Description
<b>access-list</b>	Set the access list.
<b>match ip address</b>	Match the IP address.
<b>match interface</b>	Match the next-hop IP interface.
<b>match ip route-source</b>	Match the source IP address.
<b>match metric</b>	Match the metric.
<b>match ip next-hop</b>	Match the next-hop IP address.
<b>match route-type</b>	Match the route type.
<b>set metric</b>	Set the metric.
<b>set metric-type</b>	Set the metric type.
<b>set tag</b>	Set the tag.

## 10.28 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
-----------	-------------

<b>bgp</b>	Preferentially exit BGP when the memory is insufficient.
<b>ospf</b>	Preferentially exit OSPF when the memory is insufficient.
<b>pim-sm</b>	Preferentially exit PIM-SM when the memory is insufficient.
<b>rip</b>	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** -

## 10.29 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
<i>route-map-name</i>	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.
<b>permit</b>	(Optional) If the permit keyword is defined and the rule defined by

	<p>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.</p> <p>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.</p>
<b>deny</b>	<p>(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.</p> <p>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.</p>
<i>sequence-number</i>	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.

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.

#### **Usage guidelines**

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.

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.

#### Examples

```
!  
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.

## 10.30 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
<i>start-time</i>	Start time of the lifetime.
<b>infinite</b>	Indicates that the encryption key is valid for ever.
<i>end-time</i>	<i>End time of the encryption key. It must be later than the start time.</i>
<b>duration</b> <i>seconds</i>	Duration of the encryption key after the start time. The value ranges from 1 to 2147483646.

**Default** infinite

**Command** Encryption key configuration mode

**mode**

**Usage** Use this command to specify the lifetime of an encryption key in its send direction.

**guideline**

**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** -

## 10.31 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
<i>as-number</i>	AS number of the aggregator.
<i>ip_address</i>	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.

## 10.32 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
	<i>as-number</i>	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.

The following example replaces the AS\_PATH attribute “100 101 102” for the route matched with AS path 1.

**Examples**

```
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
```

## 10.33 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
<i>as-number</i>	Indicates 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 10 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
<b>match as-path</b>	Match the AS_PATH.
<b>match community</b>	Match the community.
<b>match metric</b>	Match the route metric.
<b>match origin</b>	Match the route source.
<b>set community</b>	Set the COMMUNITY attribute.
<b>set metric</b>	Set the metric.
<b>set metric-type</b>	Set the type.

## 10.34 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

<b>Command Mode</b>	Routing map configuration mode
<b>Default Level</b>	14
<b>Usage Guide</b>	This command is used only in the BGP protocol and is used to set the ATOMIC-AGGREGATE attribute for routes.
<b>Configuration Examples</b>	N/A

## 10.35 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
<i>community-list-number</i>	Number of the community list. Standard community list number : 1-99. Extended community list number : 100-199.
<i>community-list-name</i>	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
<b>match as-path</b>	Match the AS_PATH attribute value.
<b>match metric</b>	Match the metric.
<b>match origin</b>	Match the source.
<b>set as-path prepend</b>	Set the AS_PATH attribute.
<b>set local-preference</b>	Set the local priority of the route to be redistributed.
<b>set metric-type</b>	Set the metric type.

## 10.36 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
<i>community-number</i>	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
<b>match as-path</b>	Match the AS_PATH.
<b>match community</b>	Match the community.
<b>match metric</b>	Match the metric.
<b>match origin</b>	Match the source.
<b>set as-path prepend</b>	Set the AS_PATH attribute.
<b>set origin</b>	Set the source.
<b>set metric-type</b>	Set the metric type.

## 10.37 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*

**no set dampening**

**Parameter  
description**

Parameter	Description
<i>half-life</i>	Half dampening life for the reachable or unreachable route in the range of 1 to 45 minutes, 15 minutes by default
<i>reuse</i>	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
<i>suppress</i>	When the route penalty is higher than this value, the route is suppressed. It is in the range 1 to 20000, 2000 by default
<i>max-suppress-time</i>	Maximum duration a route can be suppressed in the range 1 to 20000 minutes, 4* half-life by default.

**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
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
<b>match as-path</b>	Match the AS_PATH value.
<b>match community</b>	Match the community.
<b>match metric</b>	Match the metric.
<b>match origin</b>	Match the source.
<b>set as-path prepend</b>	Set the AS_PATH attribute.
<b>set metric</b>	Set the metric.
<b>set local-preference</b>	Set the local priority of the route to be redistributed.

## 10.38 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
<i>extcommunity-list-number</i>	<i>extcommunity-list-number</i> Standard list: ranges from 1 to 99. Expanded list: ranges from 100 to 199.
<i>extcommunity-list-name</i>	<i>extcommunity-list-name</i> It consists of a maximum of 80 characters.

**Default**

-

**Command  
mode**

Route map configuration mode.

**Usage**

This command is used to delete the **extcommunity-list**.

**guideline**

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
<b>ip extcommunity-list</b>	Configure an <b>extcommunity-list</b> .
<b>match as-path</b>	Match the AS_PATH value
<b>match metric</b>	Match the metric.
<b>match origin</b>	Match the source.
<b>set as-path prepend</b>	Set the AS_PATH attribute.
<b>set extcomm-list delete</b>	Set delete <b>extcommunity-list</b> .
<b>set local-preference</b>	Set local preference for a reroute.

**Platform  
description**

-

## 10.39 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.
<i>extend-community-value</i>	Extended community value.

**Default**

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
<b>match as-path</b>	Match the AS_PATH value
<b>match community</b>	Match the community.
<b>match metric</b>	Match the metric.
<b>match origin</b>	Match the source.
<b>set as-path prepend</b>	Set the AS_PATH attribute.
<b>set metric</b>	Set the metric.
<b>set metric-type</b>	Set the metric type.

## 10.40 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
<i>interface-type interface-number</i>	Backup outgoing interface.
<i>ip-address</i>	Backup next-hop.

**Default**

-


**Command  
mode**

Route map configuration mode.

**Usage****guideline**

Use this command to configure IP FRR backup outgoing interface and backup next-hop. The current 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
<b>match ip-address</b>	Match IP address list.

**Platform  
description**

N/A

## 10.41 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
<i>ip-address</i>	IP address of the next hop.
<i>weight</i>	Weight of the next hop.

**Default  
configuration**

None

**Command  
mode**


Route map configuration mode

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.

**Usage  
guideline**

 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.

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.

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.

#### Examples

```
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
<b>route-map</b>	Define a route map.
<b>match ip address</b>	Match the IP address.
<b>set default interface</b>	Set the default outgoing interface.
<b>set interface</b>	Set the outgoing interface.
<b>set ip next-hop</b>	Set the next hop of the packets.
<b>set ip precedence</b>	Set the priority of the packets.

#### Platform

description N/A

## 10.42 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	Parameter	Description
description	<i>dscp-value</i>	DSCP value

**Default configuration** N/A

**Command mode** Route map configuration mode

**Usage guideline** N/A

**Examples** N/A

Related commands	Command	Description
	<b>route-map</b>	Define a route map.
	<b>match ip address</b>	Match the IP address.
	<b>set default interface</b>	Set the default outgoing interface.
	<b>set interface</b>	Set the outgoing interface.
	<b>set ip next-hop</b>	Set the next hop of the packets.
	<b>set ip precedence</b>	Set the priority of the packets.

## 10.43 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	Parameter	Description
description	<i>ip-address</i>	Indicates the next-hop IP address.
	<i>weight</i>	Indicates the weight of this next hop.

**Default configuration** None

**Command** Route map configuration mode

## mode

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.

## Usage guideline

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.

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.

## Examples

```
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.

<b>match ip address</b>	Match the IP address.
<b>set default interface</b>	Set the default outgoing interface.
<b>set interface</b>	Set the outgoing interface.
<b>set ip default next-hop</b>	Set the default next hop.
<b>set ip precedence</b>	Set the priority of the packets.

## 10.44 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-object-num*

**no set ip next-hop verify-availability**

### Parameter description

Parameter	Description
<i>ip-address</i>	Indicates the next-hop IP address.
<b>track</b>	Judges whether the next hop is effective by using <i>Track</i> .
<i>track-object-num</i>	Indicates the track object number.
<b>bfd</b>	Indicates that BFD is used for neighbor detection.
<i>interface-type</i>	Configures the interface type.
<i>interface-number</i>	Configures the interface number.
<i>gateway</i>	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.

```
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
	<b>route-map</b>	Define the route map.
	<b>match ip address</b>	Match the IP address.
	<b>set default interface</b>	Set the default outgoing interface.
	<b>set interface</b>	Set the outgoing interface.
	<b>set ip default next-hop</b>	Set the default next hop.
	<b>set ip precedence</b>	Set the priority of the packets.

## 10.45 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
<i>number</i>	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
<b>critical</b>   <b>flash</b>   <b>flash-override</b>   <b>immediate</b>   <b>internet</b>   <b>network</b>   <b>priority</b>   <b>routine</b>	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
<b>match interface</b>	Match the next-hop interface.
<b>match ip address</b>	Match the IP address in the ACL.
<b>match ip next-hop</b>	Match the next-hop IP address in the ACL.
<b>match ip route-source</b>	Match the route source IP address in the ACL.
<b>match metric</b>	Match the route metric value.
<b>match route-type</b>	Match the route type.
<b>match tag</b>	Match the route tag value.
<b>set metric-type</b>	Set the type of redistributed route.
<b>set tag</b>	Set the tag value of redistributed route.
<b>set ip tos</b>	Set the tos for the IP packet head.

## 10.46 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**

**Parameter  
Description**

Parameter	Description
<i>number</i>	Indicates the TOS value of an IP header with a number, ranging from 0 to 15. 2: <b>max-reliability</b> 4: <b>max-throughput</b> 8: <b>min-delay</b> 1: <b>min-monetary-cost</b>

	0: <b>normal</b>
<b>max-reliability  </b> <b>max-throughput  </b> <b>min-delay  </b> <b>min-monetary-cost  </b> <b>normal</b>	Priority of an IP header.

**Defaults** 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.

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:

#### Examples

```
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
<b>match interface</b>	Match the next-hop interface.
<b>match ip address</b>	Match the IP address in the ACL.
<b>match ip next-hop</b>	Match the next-hop IP address in the ACL.
<b>match ip route-source</b>	Match the route source IP address in the ACL.
<b>match metric</b>	Match the route metric value.
<b>match route-type</b>	Match the route type.
<b>match tag</b>	Match the route tag value.
<b>set metric-type</b>	Set the type of redistributed route.
<b>set tag</b>	Set the tag value of redistributed route.
<b>set ip precedence</b>	Set the precedence for the IP packet head.

## 10.47 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* ] [ *global-ipv6-address* [ *weight* ] ... ]

**no set ipv6 default next-hop** *global-ipv6-address* [ *weight* ] [ *global-ipv6-address* [ *weight* ] ...]

**Parameter  
description**

Parameter	Description
<i>global-ipv6-address</i>	Indicates the next-hop IPv6 address for packet forwarding. The next-hop router must be a neighbor router.
<i>weight</i>	Indicates the weight in the load balancing mode, ranging from 1 to 8. A larger value means larger packet traffic to be shared by the next hop.

**Default**

**configuration** None

**Command**

**mode** Route map configuration mode

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.

**Usage**

**guideline**

- 
-  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
  -  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.
- 

**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
	<b>match ipv6 address</b>	Set the matching rule of policy-based routing.
	<b>ipv6 policy route-map</b>	Use the policy-based routing on the interface.
	<b>set ipv6 next-hop</b>	Set the next hop of the policy-based routing.

**Platform description** N/A

## 10.48 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** *global-ipv6-address* [weight] [...*global-ipv6-address* [weight]]

**no set ip next-hop** *global-ipv6-address* [weight] [...*global-ipv6-address* [weight]]

Parameter description	Parameter	Description
	<i>global-ipv6-address</i>	IPv6 address of the next hop. The next hop router should be the neighbor router.
	<i>weight</i>	Weight of the next hop in the load balancing mode, in the range of 1 to 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 public 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 follows.

set ipv6 next-hop;  
usual route (the non default route)  
set ipv6 default next-hop  
Default route.

The following example 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*

#### Examples

```
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
<b>match ipv6 address</b>	Set the matching rule of policy-based routing.
<b>ipv6 policy route-map</b>	Use the policy-based routing on the interface.
<b>set ipv6 next-hop</b>	Set the next hop of the policy-based routing.

#### Platform description

N/A

## 10.49 set ipv6 next-hop verify-availability

Use this command to determine the availability of the next-hop IP address.

**set ip next-hop verify-availability** *ip-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
	<i>global-ipv6-address</i>	Specifies the next-hop IPv6 address.
	<b>track</b>	Detects whether the next hop is effective by using the tracking method.
	<i>track-obj-number</i>	Specifies the tracking object number.
	<b>bfd</b>	Conducts neighbor detection by using BFD.
	<i>interface-type</i>	Specifies the interface type.
	<i>interface-number</i>	Specifies the interface number.
	<i>gateway</i>	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
```

## 10.50 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
	<i>critical</i> , <i>flash</i> , <i>flash-override</i> , <i>immediate</i> , <i>internet</i> , <i>network</i> , <i>priority</i> , <i>routine</i>	The precedence type of the IPv6 head.
	<i>0~7</i>	The configurable precedence range.

**Default** N/A

**configuration****Command****mode** Route map configuration mode

The following table shows the corresponding relationship between the value and type.

**Usage  
guideline**

Value	Type
0	routing
1	priority
2	network
3	internet
4	immediate
5	flash-override
6	flash
7	critical

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
```

**Examples****Related  
commands**

Command	Description
<b>match ipv6 address</b>	Configure the ACL used for matching the packet in IPv6 PBR.
<b>route-map</b>	Use the route map of the policy-based routing.
<b>set default interface</b>	Set the default next-hop egress.
<b>set interface</b>	Set the next hop egress.
<b>set ipv6 default next-hop</b>	Set the default next-hop address for forwarding packets.
<b>set ipv6 next-hop</b>	Set the next-hop address for forwarding packet.
<b>show ipv6 policy</b>	Show the policy-based routing
<b>show route-map</b>	Show the route map configuration.

**Platform****description** N/A

## 10.51 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

In the example below, the OSPF routing protocol redistributes the RIP protocol to the backbone area.

### 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 level backbone
```

### Related commands

Command	Description
<b>match interface</b>	Match the interface.
<b>match ip address</b>	Match the IP address.
<b>match ip next-hop</b>	Match the next-hop IP address.
<b>match ip route-source</b>	Match the source IP address.
<b>match metric</b>	Match the metric.
<b>match route-type</b>	Match the route type.
<b>match tag</b>	Match the tag.
<b>set metric-type</b>	Set the metric type.
<b>set tag</b>	Set the tag.

## 10.52 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

Parameter	Description
-----------	-------------



<b>description</b>	<i>number</i>	Local priority metric ranging 1 to 4294967295
--------------------	---------------	---

**Default**

**configuration** None

**Command**

**mode** Route map configuration mode

**Usage**

Use this command to set the local preference for the matched routes. Only one local preference can be set.

**guideline****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
<b>match as-path</b>	Match the AS_PATH attribute.
<b>match metric</b>	Match the route metric.
<b>match origin</b>	Match the source.
<b>set as-path prepend</b>	Set the AS_PATH attribute.
<b>set metric</b>	Set the metric.
<b>set metric-type</b>	Set the metric type.

## 10.53 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
<b>+</b>	Increase based on the metric of the original route
<b>-</b>	Decrease based on the metric of the original route
<i>metric-value</i>	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.

The following example enables the OSPF routing protocol to redistribute the RIP routes and sets the default metric to 40.

**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 40
```

**Related commands**

Command	Description
<b>match interface</b>	Match the interface.
<b>match ip address</b>	Match the IP address.
<b>match ip next-hop</b>	Match the next-hop IP address.
<b>match ip route-source</b>	Match the source IP address.
<b>match metric</b>	Match the metric.
<b>match route-type</b>	Match the route type.
<b>match tag</b>	Match the tag.
<b>set metric-type</b>	Set the metric type.
<b>set tag</b>	Set the tag.

## 10.54 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
<i>type</i>	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
<b>match interface</b>	Match the interface.
<b>match ip address</b>	Match the IP address.
<b>match ip next-hop</b>	Match the next-hop IP address.
<b>match ip route-source</b>	Match the source IP address.
<b>match metric</b>	Match the metric.
<b>match route-type</b>	Match the route type.
<b>match tag</b>	Match the tag.
<b>set metric</b>	Set the metric.
<b>set tag</b>	Set the tag.

## 10.55 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
<i>ip-address</i>	IP address of the next hop.

**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 following example enables the OSPF routing protocol to redistribute the RIP route and sets the next-hop to 192.168.1.2.

**Examples**

```
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
<b>match interface</b>	Match the interface.
<b>match ip address</b>	Match the IP address.
<b>match ip next-hop</b>	Match the next-hop IP address.
<b>match ip route-source</b>	Match the source IP address.
<b>match metric</b>	Match the metric.
<b>match route-type</b>	Match the route type.
<b>match tag</b>	Match the tag.
<b>set metric-type</b>	Set the metric type.

<b>set tag</b>	Set the tag.
----------------	--------------

## 10.56 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
<b>match as-path</b>	Match the AS_PATH attribute.
<b>match metric</b>	Match the route metric.
<b>match origin</b>	Match the source.
<b>set as-path prepend</b>	Set the AS_PATH attribute.
<b>set metric</b>	Set the metric.
<b>set local-preference</b>	Set the local priority of redistributed routes.

## 10.57 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	Parameter	Description
description	<i>ip-addr</i>	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
<b>match as-path</b>	Match the AS_PATH attribute.
<b>match metric</b>	Match the route metric.
<b>match origin</b>	Match the source.
<b>set as-path prepend</b>	Set the AS_PATH attribute.
<b>set metric</b>	Set the metric.
<b>set local-preference</b>	Set the local priority of redistributed routes.

## 10.58 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	Parameter	Description
<b>description</b>	<i>tag</i>	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.

The following example enables the OSPF routing protocol to redistribute the RIP route and sets the tag as 100.

**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 tag 100
```

**Related commands**

Command	Description
<b>match interface</b>	Match the interface.
<b>match ip address</b>	Match the IP address.
<b>match ip next-hop</b>	Match the next-hop IP address.
<b>match ip route-source</b>	Match the source IP address.
<b>match metric</b>	Match the metric.
<b>match route-type</b>	Match the route type.
<b>match tag</b>	Match the tag.
<b>set metric</b>	Set the metric.
<b>set metric-type</b>	Set the metric type.

## 10.59 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	Parameter	Description
<b>description</b>	<i>number</i>	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.

The following example sets the weight for the BGP route learned from the neighbor 1.1.1.1 at the inbound direction to 100.

**Examples**

```
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
<b>match as-path</b>	Match the AS_PATH attribute.
<b>match community</b>	Match the route community.
<b>match metric</b>	Match the route metric.
<b>match origin</b>	Match the source.
<b>set community</b>	Set community of the redistributed route.
<b>set metric</b>	Set the metric of the redistributed route.
<b>set metric type</b>	Set the metric type of the redistributed route.

## 10.60 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
<i>num</i>	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** -

## 10.61 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
<i>community-list-number</i>	Number of the community list.
<i>community-list-name</i>	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.

## 10.62 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
<i>extcommunity-list-num</i>	extcommunity-list number, ranging from 1 to 199.
<i>extcommunity-list-name</i>	extcommunity-list name.

**Default**

-

**Command  
mode**

Privileged EXEC mode, global configuration mode, interface configuration mode, routing protocol configuration mode and route map configuration 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
<b>ip extcommunity-list</b>	Create an extcommunity-list.
<b>match extcommunity</b>	Match an extcommunity.
<b>set extcommunity</b>	Set an extcommunity.

**Platform  
description**

-

## 10.63 show ip prefix-list

Use **show ip prefix-list** to display the prefix list or the entries.

**show ip prefix-list** [*prefix-name*]

Parameter	Parameter	Description
description	<i>prefix-name</i>	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
seq pre: 2 entries
seq 5 permit 192.168.564.0/24
seq 10 permit 192.2.2.0/24
```

## 10.64 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	Parameter	Description
Description	<i>vrf-name</i>	Specifies the VRF instance name. If it is not specified, information about the status of routing protocols in global VRF mode is displayed.
	<b>bgp</b>	Displays information about the status of the BGP protocol.
	<b>isis</b>	Displays information about the status of the IS-IS protocol.
	<b>ospf</b>	Displays information about the status of the OSPF protocol.
	<b>rip</b>	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

## 10.65 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	Parameter	Description
description	<i>prefix-name</i>	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
    seq 5 permit 13::/20
    seq 10 permit 14::/20
```

## 10.66 show key chain

Use this command to display the key chain configuration.

**show key chain** [*key-chain-name*]

Parameter	Parameter	Description
description	<i>key-chain-name</i>	(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# show key chain
route-map AAA, permit, sequence 10
Match clauses:
ip address 2
Set clauses:
```

```
metric 10
Ruijie(config)#show key chain
key chain kc
    key 1 -- text "ruijie"
        accept-lifetime (12:11:00 May  2 2001) - (infinite)
        send-lifetime (always valid) - (always valid) [valid now]
```

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**

-

## 10.67 show route-map

Use the command to display the configuration of the route map.

**show route-map** [*route-map-name*]

**Parameter  
description**

Parameter	Description
<i>route-map-name</i>	(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.



## Multicast Commands

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1. IPv4 Multicast Routing Commands
2. IGMP Commands
3. PIM-DM Commands
4. PIM-SM Commands
5. IGMP 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
*	Remove all the forwarding information in the IP multicast route table.
<i>group-address</i>	Group IP address of IP multicast routes.
<i>source-address</i>	Source IP address of multicast routess.

**Command Mode** Privileged EXEC mode.

### 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
<b>show ip mroute</b>	Show the forwarding information of multicast routes.

## 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
*	Remove all the forwarding entries in the multicast route table.
<i>group-address</i>	Group IP address of IP multicast routes
<i>source-address</i>	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.

**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	Show the multicast route forwarding information.
clear ip mroute	Clear the multicast route forwarding information.

## 1.3 ip mroute

Use this command to configure static multicast routes. Use the **no** form of this command to delete the configured routes.

**ip mroute** *source-address mask [protocol as-number] {rpf-address | interface-type interface-number} [distance]*

**no ip mroute** *source-address mask [protocol]*

**Parameter  
Description**

Parameter	Description
<i>source-address</i>	Source IP address of the multicast route
<i>mask</i>	Mask of the source IP address
<i>protocol</i>	(Optional) The unicast routing protocol being used.
<i>rpf-address</i>	Incoming interface of the multicast route
<i>interface-type</i> <i>interface-number</i>	Interface type and interface ID.
<i>distance</i>	Management distance used to determine whether to use the route for RPF routing, ranging from 1 to 255. The default value is 0.

**Default**

*distance*: 0.

**Command Mode**

Global configuration mode.

**Usage Guide**

This command is used to configure the route for the purpose of RPF check. Note that the configured route is prior to the route learned in the unicast form.

**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
```

## 1.4 ip multicast boundary

Use this command to configure the boundary of an IP multicast group. The **no** form of this command removes the configured boundary.

**ip multicast boundary** *access-list*

**no ip multicast boundary** *access-list*

**Parameter**  
**Description**

Parameter	Description
<i>access-list</i>	Access list associated with the multicast boundary.

**Default**

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.

**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
```

## 1.5 ip multicast route-limit

Use this command to limit the number of the entries that can be added to the multicast routing table.

**ip multicast route-limit** *limit* [*threshold*]

**no ip multicast route-limit** *limit* [*threshold*]

**Parameter**  
**Description**

Parameter	Description
<i>limit</i>	The number of the entries that can be added to the multicast routing table is 1 to 2147483647. The default value is 1024.
<i>threshold</i>	(Optional) Number of multicast routes at which alarms will be triggered. The default value is 2147483647.

**Default** 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.

For S86 and S12000, the default CPP value of PIM packets is 128pps and that of IGMP packets is 1000pps. 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.

**Examples** The following example sets the route limit to 500.

```
Ruijie(config)# ip multicast route-limit 500
```

## 1.6 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.

The no form of this command restores 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**

**Parameter**  
**Description**

Parameter	Description

**Default**

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.

**Examples**

The following example configures to select the routing with the longest-match.

```
Ruijie(config)# ip multicast rpf longest-match
```

## 1.7 ip multicast static

Use this command to enable flow control for multicast packets on the Layer 2 interface. The **no** form of this command removes the setting.

**ip multicast static** *source-address group-address interface-type interface-number*

**no ip multicast static** *source-address group-address interface-type interface-number*

**Parameter  
Description**

Parameter	Description
<i>source-address</i>	Source IP address
<i>group-address</i>	IP address of the multicast group
<i>interface-type interface number</i>	Layer 2 interface on which multicast packets are allowed to forward

**Default** Disabled

**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.

**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 192.168.43.4 255.1.1.5 G2/6  
Ruijie(config)# ip multicast static 192.168.43.4 255.1.1.5 F3/2
```

## 1.8 ip multicast ttl-threshold

Use this command to configure TTL (time-to-live) threshold on the interface. Use the **no** form of the command to restore it to the default value.

**ip multicast ttl-threshold** *ttl-value*

**ip multicast ttl-threshold**

Parameter	Parameter	Description
Description	<i>ttl-value</i>	TTL threshold on the interface, within the range of 0 to 255.

**Default** 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.

**Examples** The following example sets the TTL threshold on the interface to 5.

```
Ruijie(config-if)# ip multicast ttl-threshold 5
```

## 1.9 ip multicast-routing

Use this command to enable multicast routing forwarding. The **no** form of this command disables multicast routing forwarding.

**ip multicast-routing**

**no ip multicast-routing**


Parameter	Parameter	Description
Description		.

**Default** Disabled.

**Command Mode** Global configuration mode.

This command allows you to enable IPv4 multicast routing forwarding. The multicast protocol will not be enabled with IPv4 multicast routing forwarding disabled.

### Usage Guide

 It is not recommended to configure different v4 multicast routing protocols on different interfaces of a device.

### Examples

This command enables multicast routing forwarding.

```
Ruijie(config)# ip multicast-routing
```

## 1.10 msf ipmc-overflow override

Use this command to enable the overflow overriding mechanism.

**msf ipmc-overflow override**

**no msf ipmc-overflow override**

Parameter	Parameter	Description
Description	-	-

**Default** Disabled.

**Command Mode** Global configuration mode.

**Usage Guide** N/A

### Examples

The following example enables the overflow overriding mechanism.

```
Ruijie (config)# msf ipmc-overflow override
Ruijie (config)#
```

## 1.11 msf nsf

Use this command to configure the parameter for the continuous multicast forwarding.

**msf nsf {{convergence-time *time*} | {leak *interval*}}**

**no msf nsf {convergence-time | leak}**

Parameter	Parameter	Description
Description	convergence-time <i>ttl-value</i>	Maximum time for the multicast protocol convergence, in the valid range of the 0-3600s.
	leak <i>interval</i>	Packet multicast leak time, in the valid range of 0-3600s

**Default** convergence-time *time* :140s;  
leak interval: 150s

**Command Mode** Global configuration mode.

**Usage Guide** N/A

The following example sets the maximum time for the protocol convergence.

```
Ruijie (config)# msf nsf convergence-time 300
Ruijie (config)#
```

#### Examples

The following example sets the packets leak time:

```
Ruijie(config)# msf nsf leak 200
Ruijie(config)#
```

## 1.12 show ip mrf mfc

Use this command to show the IPv4 multicast routing forwarding table.

**show ip mrf mfc** [*source-address group-address*]

**Parameter**  
**Description**

Parameter	Description
<i>source-address</i>	Source address of the multicast routing forwarding entries.
<i>group-address</i>	Group address of the multicast routing forwarding entries.

**Default** All IPv4 multicast routing forwarding entries are displayed by default.

**Command Mode** Privileged EXEC mode.

The three parameters in this command are optional, wherein the source address and group address must be specified at the same time.

#### Usage Guide

- 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.

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, SWITCHED, MIN_MTU: 1500, MIN_MTU_IFINDEX: 4099, WRONG IF: 0
Incoming interface: VLAN 1[4097]
Outgoing interface list:
VLAN 3 (1)
```

#### Examples



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.

## 1.13 show ip mroute

Use this command to show the multicast forwarding table.

**show ip mroute** [*group-or-source-address* [*group-or-source-address*]] [**dense** | **sparse**] [**summary** | **count**]

Parameter  
Description

Parameter	Description
<i>group-address</i>	Multicat group IP address
<i>group-or-source-address</i>	Multicast or source IP address
<i>group-or-source-address</i>	Multicast or source IP address. The two addresses must not be the multicast addresses or source addresses at the samet time.
<b>dense</b>	Show PIM-DM multicast routing table.
<b>sparse</b>	Show PIM-SM multicast routing table.
<b>summary</b>	Show the summary of the multicast routing table.
<b>count</b>	Show the count of the multicast routing table.

**Command Mode** Privileged EXEC mode.

**Examples** The following example shows the information of the multicast routing table:

```
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 shows 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 shows 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 rcv 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 rcv/Reg NACK rcv/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 rcv
Client msg counts: WRONGVIF/WHOLEPKT/Imm Stat/Timed Stat sent
Reg pkt counts: Reg ACK rcv/Reg NACK rcv/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 shows 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
<b>ip multicast-routing</b>	Enabling the multicast routing forwarding.
<b>ip pim dense-mode</b>	Enable the PIM-DM on the interface.
<b>ip pim sparse-mode</b>	Enable the PIM-SM on the interface.

## 1.14 show ip mroute static

Use this command to show the v4 static multicast routing information.

**show ip mroute static**

**Parameter**  
**Description**

Parameter	Description

**Command 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.

The following example shows the information of the user-configured static multicast routing:

#### Examples

```
Ruijie#show ip mroute static
Mroute: 172.16.0.0, RPF neighbor: 172.30.10.13
Protocol: , distance: 0
```

## 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
<i>interface-type interface-number</i>	Interface Type and number

#### Command Mode

Privileged EXEC mode.

The following example shows the basic information of the multicast interface of svil.

#### Examples

```
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
```

## 1.16 show ip rpf

Use this command to show the RPF information of the specified source IP address.

**show ip rpf** {*source-address* [*group-address*] [**rd** *route-distinguisher*]} [**metric**].

#### Parameter

#### Description

Parameter	Description
<i>source-address</i>	Specified source IP address
<i>group-address</i>	Specified source IP address
<b>rd</b> <i>route-distinguisher</i>	Use the RD provy for the serching.
<b>metric</b>	Show the metric of the MDT-SAFI route.

#### Command Mode

Privileged EXEC mode.

The following example shows the information of the RPF to 192.168.1.54:

#### Examples

```
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
```

## 1.17 show msf msc

Use this command to show IPv4 multi-layer multicast forwarding table.

**show msf msc** [*source-address*] [*group-address*] [*vlan-id*]

### Parameter Description

Parameter	Description
<i>source-address</i>	Specified source IP address of the multi-layer multicast forwarding table.
<i>group-address</i>	Specified group address of the multi-layer multicast forwarding table.
<i>vlan-id</i>	The Vlan id where the incoming interface of the multi-layer multicast forwarding table is. 4096 indicates a routed port.

### Default

All IPv4 multi-layer multicast forwarding entries are displayed by default.

### Command

#### 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.

### Examples

The following example shows 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.

## 1.18 show msf nsf

Use this command to show the configuration of continuous multicast forwarding.

**show msf nsf**

**Parameter**  
**Description**

Parameter	Description
-	-

**Command Mode**

Privileged EXEC mode.

**Examples**

The following example shows 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	Configure the multicast NSF parameter.

## 2 IGMP Commands

### 2.1 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
	<i>group-address</i>	32-bit multicast group IP address
	<i>interface-type</i>	Interface type
	<i>interface-number</i>	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
	<b>show ip igmp groups</b>	N/A
	<b>show ip igmp interface</b>	N/A

**Platform Description** N/A

### 2.2 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



<i>interface-type</i>	Interface type
<i>interface-number</i>	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. The information includes the number of report/leave packets, and group members on interfaces.

**Configuration** The following example clears the IGMP entry for the interface.

**Examples** Ruijie# clear ip igmp interface gi 0/1

<b>Related Commands</b>	Command	Description
	N/A	N/A

**Platform Description** N/A

## 2.3 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**

<b>Parameter Description</b>	Parameter	Description
	<i>access-list</i>	Name of access control list in the range from 1 to 199, 1,300 to 2,699, 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** The following example adds the interface Ethernet 0/1 to the group 225.2.2.2.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# access-list 1 permit 225.2.2.2 0.0.0.0
Ruijie(config)# interface ethernet 0/1
```

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-Ethernet 0/1)# ip igmp access-group ext_acl
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 2.4 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
<i>access-list</i>	Name of access control list in the range from 1 to 199, 1,300 to 2,699, or characters.

**Defaults** This function is disabled by default.

**Command****Mode** Interface configuration 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-Ethernet 0/1)# ip igmp immediate-leave group-list 1
Ruijie(config-if-Ethernet 0/1)# exit
```

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A**Description**

## 2.5 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
<i>group-address</i>	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** The following example adds a host group member manually.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# interface fast 0/1
Ruijie(config-if-Ethernet 0/1)# ip igmp join-group 233.3.3.3
Ruijie(config-if-Ethernet 0/1)# exit
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 2.6 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
<i>number</i>	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** This command only supports IGMPv2 and IGMPv3.

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.

The waiting time = last-member-query-interval \* last-member-query-count + 1/2 \* query-max-response-time

**Configuration** The following example sets the value of last member query count to 3.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0
Ruijie(config-if-Ethernet 0/1)# ip igmp last-member-query-count 3
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 2.7 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
	<i>interval</i>	The interval sending the group query message in the range from 1 to 255 in the unit of 0.1 second.

**Defaults** The default is 10 (1 second).

**Command Mode** Interface configuration mode

**Usage Guide** This command only supports IGMPv2 and IGMPv3.

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.

The waiting time = last-member-query-interval \* last-member-query-count + 1/2 \* query-max-response-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-Ethernet 0/1)# ip igmp last-member-query-interval 200
```

Related	Command	Description

**Commands**

N/A	N/A

**Platform** N/A**Description**

## 2.8 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
<i>number</i>	Maximum number of IGMP states, depending on devices
<b>except</b> <i>access-list</i>	Name of access control list in the range from 1 to 199, 1,300 to 2,699, or characters.

**Defaults**

Global: 65,536

Interface:1,0124

**Command  
Mode**

Global configuration mode/Interface configuration mode

**Usage Guide**

Use this command to configure the maximum number of IGMP group records globally or on interfaces. The messages of the members exceeding the threshold will not be saved in the IGMP buffer and will not be forwarded. The messages of the members will be ignored if they exceed the interface or global configuration. If the configured value in global configuration mode is less than that in interface configuration mode, take the former.

**Configuration  
Examples**

The following example sets the maximum number to 400 globally and to 300 on interfaces except ACL 1.

```
Ruijie# configure terminal
Ruijie(config)# ip igmp limit 400 except acl1
Ruijie(config)# interface eth 0/1
Ruijie(config-if-Ethernet 0/1)# ip igmp limit 300 except acl1
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A  
**Description**

## 2.9 ip igmp mroute-proxy

Use this command to configure an interface as an 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** *interface-type interface-number*

**no ip igmp mroute-proxy**

**default ip igmp mroute-proxy**

Parameter Description	Parameter	Description
	<i>interface-type</i> <i>interface-number</i>	Name of the relevant uplink interface

**Defaults** This function is disabled by default.

**Command Mode** Interface configuration mode

**Usage Guide** Use the **ip igmp proxy-service** command to set the uplink interface as the **proxy-service** interface. Use the **ip igmp mroute-proxy** command to set the downlink interface as the **mroute-proxy** interface. IGMP query packets are forwarded from the **proxy-service** interface to the **mroute-proxy** interface. IGMP report packets are forward reversely.

**Configuration Examples** The following example configures E0/1 as **proxy-service** E0/2 as **mroute-proxy**.

```
Ruijie(config)# interface eth 0/1
Ruijie(config-if-Ethernet 0/1)# ip igmp proxy-service
Ruijie(config-if-Ethernet 0/1)# exit
Ruijie(config)# interface eth 0/2
Ruijie(config-if-Ethernet 0/2)# ip igmp mroute-proxy
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 2.10 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** N/A

**Command Mode** Interface configuration mode

**Usage Guide** Use the **ip igmp proxy-service** command to set the uplink interface as the **proxy-service** interface. Use the **ip igmp mroute-proxy** command to set the downlink interface as the **mroute-proxy** interface.

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 E0/1 as **proxy-service** and E0/2 as **mroute-proxy**.

```
Ruijie(config)# interface eth 0/1
Ruijie(config-if-Ethernet 0/1)# ip igmp proxy-service
Ruijie(config-if-Ethernet 0/1)# exit
Ruijie(config)# interface eth 0/2
Ruijie(config-if-Ethernet 0/2)# ip igmp mroute-proxy
```

Related Commands	Command	Description
	N/A	N/A



**Platform** N/A  
**Description**

## 2.11 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
	<i>seconds</i>	Query interval of ordinary member, in the range is from 1 to 18,000 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 Examples** The following example configures the query interval of ordinary member to 120 seconds on the interface Ethernet 0.

```
Ruijie(config-if)# ip igmp query-interval 120
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 2.12 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**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<i>seconds</i>	The maximum response interval, in the range from 1 to 25 seconds
<b>Defaults</b>	The default is 10 seconds.	
<b>Command Mode</b>	Interface configuration mode	
<b>Usage Guide</b>	This command controls the interval for the respondent to respond the query message before the device deletes the group information.	
<b>Configuration Examples</b>	The following example configures the maximum response interval to 20 seconds on the interface Ethernet 0.	
	<pre>Ruijie(config-if-Ethernet 0/1)# ip igmp query-max-response-time 20</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	N/A	N/A
<b>Platform Description</b>	N/A	

## 2.13 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**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<i>seconds</i>	Time the device waits before it takes over as the querier, in the range from 60 to 300 in the unit of seconds.
<b>Defaults</b>	The default is 255 seconds.	
<b>Command Mode</b>	Interface configuration mode	

**Usage Guide** 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 200 s seconds on the interface Ethernet 0/1.

```
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if-Ethernet 0/1)# ip igmp query-timeout 200
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A  
**Description**

## 2.14 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
<i>number</i>	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(config)# interface ethernet 0/1
Ruijie(config-if-Ethernet 0/1)# ip igmp robustness-variable 3
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

## Description

## 2.15 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**

The following example sends IGMP report packets with the Router Alert option.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# ip igmp send-router-alert
```

**Platform**

N/A

**Description**

## 2.16 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** The following example enables the **igmp ssm-map** function in the global configuration mode.

**Examples**

```
Ruijie(config)# ip igmp ssm-map enable
Ruijie(config)# ip igmp ssm-map static 11 192.168.2.2.
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A  
**Description**

## 2.17 ip igmp ssm-map static

Use this command to map the static **ssm-map** source IP address to the group records.

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

**ip igmp ssm-map static** *access-list source-address*

**no ip igmp ssm-map static** *access-list source-address*

**default ip igmp ssm-map enable** *access-list source-address*

**Parameter  
Description**

Parameter	Description
<i>access-list</i>	ACL name in the range 1 to 99, 1,300 to 1,999 or characters.
<i>source-address</i>	Unicast address mapped to the group record.

**Defaults** This function is disabled by default.

**Command** Global configuration mode  
**Mode**

**Usage Guide** This command is used together with the **ip igmp ssm-map enable** and **ip igmp ssm-map static** command. After configuration, the port maps the corresponding source IP address to all received messages below **v3**.

**Configuration** The following example maps the source address 192.168.2.2 to all group records permitted by ACL 11.

**Examples**

```
Ruijie(config)# ip igmp ssm-map enable
Ruijie(config)# ip igmp ssm-map static 11 192.168.2.2.
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 2.18 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.  
The added interfaces by this command can only be deleted by using the **no ip igmp static-group** command.

**Configuration Examples** The following example adds a host group member.

```
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if-Ethernet 0/1)# ip igmp static-group 236.6.6.6
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 2.19 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	IGMP v1
2	IGMP v2
3	IGMP v3

### Defaults

The default is IGMPv2.

### 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

The following example sets the version number to 3.

### Examples

```
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if-Ethernet 0/1)# ip igmp version 3
```

### Related Commands

Command	Description
N/A	N/A

### Platform

N/A

### Description

## 2.20 ip igmp enforce-router-alert

Use this command to receive IGMP packets with **router-alert** option.

**ip igmp enforce-router-alert**

Use the **no** form of this command to receive all IGMP packets.

**no ip igmp enforce-router-alert**

Use the **default** form of this command to restore the default setting.

**default ip igmp enforce-router-alert**

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 receives IGMP packets with **router-alert** option.

```
Ruijie# configure terminal
Ruijie(config)#ip igmp enforce-router-alert
```

**Platform Description** N/A

## 2.21 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** N/A



**Guide**

**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** N/A

**Description**

## 2.22 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** [ *interface-type interface-number* ] [ *group-address* ] [ **detail** ]

**Parameter Description**

Parameter	Description
<i>group-address</i>	32-bit multicast group IP address, namely Category D address. 8 bits are in one group in decimal form. Groups are separated with dots.
<i>interface-type</i>	Interface type
<i>interface-number</i>	Interface number
<b>detail</b>	Displays the detailed information

**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** N/A  
**Description**

## 2.23 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
<i>interface-type</i>	Interface type.
<i>interface-number</i>	Interface number.

**Defaults** N/A

**Command  
Mode** Privileged EXEC mode

**Usage Guide** Run this command without any parameter, and all interface information is displayed by default.

**Configuration** The following example displays the information of all the interfaces.

**Examples**

```
Ruijie# show ip igmp interface
Interface vlan 1 (Index 4294967295)
IGMP Active, Non-Querier, Version 3 (default)
IGMP querying router 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
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

## 2.24 show ip igmp ssm-mapping

Use this command to display the **ssm-map** information of the IGMP configuration.

**show ip igmp ssm-mapping** [ *group-address* ]

**Parameter  
Description**

Parameter	Description
<i>group-address</i>	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** The following example displays the **ssm-map** configuration information.

**Examples**

```
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

## 3 PIM-DM Commands

### 3.1 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**

The following example clears the statistics of PIM-DM packets.

**Examples**

```
Ruijie# clear ip pim dense-mode track
```

**Related  
Commands**

Command	Description
<b>show ip pim dense-mode track</b>	Displays the statistics of the PIM packets.

**Platform**

N/A

**Description**

### 3.2 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.
-  IPv4 multicast function supports only 4Over4, 4Over4 GRE, 4Over6, and 4Over6 GRE on tunnel ports. For those multicast-incapable, through multicast function can be enabled, there are no error prompts and packet multicast transmission.
-  Multicast tunnels can be established only on Ethernet ports, which do not support nested tunneling and multicast QoS/ACL.

**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

## 3.3 ip pim neighbor-filter

Use this command to enable the neighbor filtering on the interface. 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
<i>access-list</i>	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**



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.

**Configuration**

The following example enables the neighbor filtering on the interface.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim neighbor-filter 14
```

-  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.
-  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**

N/A

**Description**

### 3.4 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**

<b>Parameter Description</b>	Parameter	Description
	<i>interval-milliseconds</i>	In the range from 1 to 65,535 in the unit of milliseconds
<b>Defaults</b>	The default is 2,500 milliseconds.	
<b>Command Mode</b>	Interface configuration mode	
<b>Usage Guide</b>	Configuring the override-interval is to set the pruning veto time for the interface.	
<b>Configuration Examples</b>	<p>The following example sets the override-interval to 3,000 milliseconds.</p> <pre>Ruijie# configure terminal Ruijie(config)# interface fastethernet 0/1 Ruijie(config-if)# ip pim override-interval 3000</pre>	
<b>Related Commands</b>	Command	Description
	N/A	N/A
<b>Platform Description</b>	N/A	

### 3.5 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**

<b>Parameter Description</b>	Parameter	Description
	<i>interval-milliseconds</i>	Propagation-interval of the hello message in the range from 1 to 32,767 in the unit of milliseconds
<b>Defaults</b>	The default is 500 milliseconds.	
<b>Command Mode</b>	Interface configuration mode	
<b>Usage Guide</b>	Configuring the propagation-delay is to set the transmission delay time for the interface.	

**Configuration** The following example sets the propagation-delay to 600 milliseconds.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim propagation-delay 600
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 3.6 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
<i>interval-seconds</i>	Interval of sending the hello message in the range from 1 to 65,535 in the unit of seconds

**Defaults** The default is 30 seconds.

**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** The following example sets the interval of sending the hello message to 123 seconds.

**Examples**

```
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** N/A



**Description**

### 3.7 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.

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.

**Configuration**

The following example disables the processing of the PIM-DM state refresh message.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# ip pim state-refresh disable
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

### 3.8 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
	<i>interval-seconds</i>	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

### 3.9 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** Global configuration mode

**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

### 3.10 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
<i>interface-type</i> <i>interface-number</i>	Interface type and interface ID
<b>detail</b>	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
<b>show ip pim dense-mode neighbor</b>	Displays the information about the neighbors of the PIM-DM interface.

**Platform** N/A  
**Description**

## 3.11 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
<i>group-or-source-address</i>	Group address or source address
<i>group-or-source-address</i>	Group address or source address. Two addresses cannot both be the group addresses or the source addresses.
<b>summary</b>	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

### 3.12 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
<i>interface-type</i>	Interface type and interface ID
<i>interface-number</i>	

**Defaults**

N/A

**Command  
Mode**

Privileged EXEC mode/Global configuration mode/Interface configuration mode

**Usage Guide**

N/A

**Configuration** The following example displays the information about the PIM-DM neighbors.

**Examples**

```
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** N/A  
**Description**

### 3.13 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** N/A  
**Description**

### 3.14 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.

#### Examples

```
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
------------------	---------	-------------

<b>clear ip pim dense-mode track</b>	Clears the statistics of the PIM packets.
--------------------------------------	---

**Platform** N/A

**Description**



## 4 PIM-SM Commands

### 4.1 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
N/A	N/A

**Defaults** N/A

**Command  
Mode** Privileged EXEC mode

**Usage Guide** All the RP information learnt dynamically can be cleared manually.

**Configuration** The following example clears all the RP information learnt dynamically.

**Examples** Ruijie# clear ip pim sparse-mode bsr rp-set \*

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description** N/A

### 4.2 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** Privileged EXEC mode

**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
<b>show ip pim sparse-mode track</b>	Displays the PIM packet statistics.

**Platform** N/A

**Description**

### 4.3 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
<b>list access-list</b>	IP standard number ACL in the range of 1 to 99, 1300 to 1999 and characters

**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(config)# ip pim accept-bsr list 1
```

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A

## Description

## 4.4 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 Description	Parameter	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)# ip pim accept-crp-with-null-group
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 4.5 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	Parameter	Description
-----------	-----------	-------------

<b>Description</b>		
	<b>list</b> <i>access-list</i>	IP extension number ACL in the range of 1 to 99, 1300 to 1999 and characters
<b>Defaults</b>	By default, the elected BSR receives all external advertisements of candidate RPs.	
<b>Command Mode</b>	Global configuration mode	
<b>Usage Guide</b>	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.	
<b>Configuration Examples</b>	<p>The following example confines the C-RP address range and the multicast group address range it serves.</p> <pre>Ruijie (config)# ip pim accept-crp list 100</pre>	
<b>Related Commands</b>	Command	Description
	N/A	N/A
<b>Platform</b>	N/A	
<b>Description</b>		

## 4.6 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**

<b>Parameter Description</b>	Parameter	Description
	<b>list</b> <i>access-list</i>	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.
	<b>route-map</b> <i>map-name</i>	Uses a route map to define the (S, G) address range.
<b>Defaults</b>	The (S, G) address range is not confined by default.	
<b>Command Mode</b>	Global configuration mode	

**Usage Guide** This command is used to confine the source IP address of register messages on RP.

**Configuration** The following example confines the source address of register packets on the RP.

**Examples**

```
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** N/A

**Description**

## 4.7 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** The following example sets the BSR border on the interface *g 0/3*

**Examples**

```
Ruijie(config)# interface gi 0/3
Ruijie(config-if- GigabitEthernet 0/3)# ip pim bsr-border
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 4.8 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.

**ipv6 pim bsr-candidate** *interface-type interface-number* [ *hash-mask-length* [ *priority-value* ] ]

**no ipv6 pim bsr-candidate**

**default ip pim bsr-candidate**

**Parameter  
Description**

Parameter	Description
<i>interface-type</i> <i>interface-number</i>	Interface type and number
<i>hash-mask-length</i>	(Optional) HASK mask length configured for electing the RP in the range from 0 to 32, The default is 10.
<i>priority-value</i>	(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** The following example configures the C-BSR.

**Examples** Ruijie(config)# ip pim bsr-candidate gi 0/3 30 192

Related Commands	Command	Description
	<b>access-list</b>	N/A

**Platform** N/A  
**Description**

## 4.9 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
	<i>priority-value</i>	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(config)# interface gi 0/3
Ruijie(config-if-GigabitEthernet 0/3)# ip pim dr-priority 10000
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 4.10 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

## 4.11 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
	<i>seconds</i>	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** Global configuration mode

**Mode**

**Usage Guide** N/A

**Configuration** The following example sets the interval to send the Join/Prune message to 50 seconds.

**Examples** Ruijie(config)# ip pim jp-timer 50

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 4.12 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
<i>access_list</i>	Access control list supporting numerical ACL in the range 1 to 99 and name ACL

**Defaults** This function is disabled by default.

**Command** Interface configuration mode

**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** The following example blocks the neighbor address 192.168.1.5.

**Examples** Ruijie(config)# interface gi 0/3  
 Ruijie(config-if- GigabitEthernet 0/3)# ip pim neighbor-filter 14  
 Ruijie(config-if- GigabitEthernet 0/3)# exit  
 Ruijie(config)# access-list 14 deny 192.168.1.5 0.0.0.255

Related Commands	Command	Description
	<b>access-list</b>	N/A

**Platform** N/A  
**Description**

## 4.13 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** The following example disables join restraint on the interface.

**Examples**

```
Ruijie(config)# interface gi 0/3
Ruijie(config-if-GigabitEthernet 0/3)# ip pim neighbor-tracking
```

Related Commands	Command	Description
	<b>ip pim propagation-delay</b>	N/A

**Platform** N/A  
**Description**

## 4.14 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
	<i>interval-milliseconds</i>	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** 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(config)# interface gi 0/3
Ruijie(config-if-GigabitEthernet 0/3)# ip pim override-interval 3000
```

Related Commands	Command	Description
	<b>ip pim propagation-delay</b>	N/A

**Platform** N/A

**Description**

## 4.15 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	Parameter	Description
-----------	-----------	-------------

<b>Description</b>		
	<i>interval-seconds</i>	In the range from 1 to 65535 seconds
<b>Defaults</b>	The default is 5 seconds.	
<b>Command Mode</b>	Global configuration mode	
<b>Usage Guide</b>	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.	
	<p> 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.</p>	
<b>Configuration Examples</b>	The following example sets the probe time to 6 seconds.	
<b>Examples</b>	<pre>Ruijie(config)# ip pim probe-interval 6</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	N/A	N/A
<b>Platform</b>	N/A	
<b>Description</b>		

## 4.16 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**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<i>imilliseconds</i>	In the range from 1 to 32,765 milliseconds
<b>Defaults</b>	The default is 500 milliseconds.	
<b>Command Mode</b>	Interface configuration mode	
<b>Usage Guide</b>	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** The following example sets the propagation delay to 600 milliseconds.

**Examples**

```
Ruijie(config)# interface gi 0/3
Ruijie(config)# ip pim propagation-delay 600
```

**Related  
Commands**

Command	Description
<b>ip pim override-interval</b>	N/A
<b>ip pim neighbor-tracking</b>	N/A

**Platform** N/A

**Description**

## 4.17 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
<i>seconds</i>	Interval to send the Hello message, in the range from 1 to 65,535 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** The following example sets the interval to send the hello packets to 123 seconds.

**Examples**

```
Ruijie(config)# interface gi 0/3
Ruijie(config)# ip pim query-interval 123
```

**Related**

Command	Description
---------	-------------

<b>Commands</b>		
	N/A	N/A

**Platform** N/A

**Description**

## 4.18 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 ]**

<b>Parameter Description</b>	Parameter	Description
	<i>access-list</i>	Access-list: access control list supporting numerical ACL in the range from 100 to 199 and from 1300 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.

**Configuration** The following example calculates the checksum of the whole register packet.

**Examples**

```
Ruijie(config)#ip pim register-checksum-wholepkt group-list 99
Ruijie(config)# access-list 99 permit 225.1.1.1 0.0.0.255
```

<b>Related Commands</b>	Command	Description
	<b>access-list</b>	N/A

**Platform** N/A

**Description**

## 4.19 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 decapsulating and forwarding 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.

**Configuratio  
n Examples**

The following example enables the RP to decapsulate the register packets and forwards the multicast packets.

```
Ruijie(config)# ip pim register-decapsulate-forward
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

## 4.20 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
<i>rate</i>	Maximum number of register packets that can be sent per second, in

	the range from 1 to 65,535
--	----------------------------

**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(config)# ip pim register-rate-limit 3000
```

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

## 4.21 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 Description**

Parameter	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(config)# ipv6 pim register-rp-reachability
```



Related Commands	Command	Description
	N/A	N/A

Platform N/A  
Description

## 4.22 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
	<i>interface-type</i>	Interface whose IP address is used as the source IP address of register packets
	<i>interface-number</i>	
	<i>local_address</i>	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(config)# ip pim register-source 192.168.195.80
Ruijie(config)# ip pim register-source gi 0/3
```

Related Commands	Command	Description
	N/A	N/A

Platform N/A  
Description

## 4.23 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
	<i>seconds</i>	Suppression time in the range from 1 to 65,535 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(config)# ip pim register-suppression 100
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 4.24 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
	<i>rp-address</i>	IP address of RP
	<i>access_list</i>	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 Examples** The following example specifies the source IPv6 address of the register packet.

```
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
<b>access-list</b>	N/A

**Platform Description** N/A

## 4.25 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
	<i>interface-type</i> <i>interface-number</i>	Interface type and interface number
	<i>priority-value</i>	(Optional) Priority in the range 0 to 255, 192 by default
	<i>seconds</i>	(Optional) Interval in the range 0 to 16,383 seconds, 60s by default
	<i>access_list</i>	(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** The following example configures the C-RP.

**Examples**

```
Ruijie(config)# ip pim rp-candidate gi 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
	<b>access-list</b>	N/A

**Platform Description** N/A

## 4.26 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	Parameter	Description
-----------	-----------	-------------

<b>Description</b>		
	<i>seconds</i>	KAT timer time in the range from 1 to 65,525 in the unit of seconds
<b>Defaults</b>	The default is 210 seconds.	
<b>Command Mode</b>	Global configuration mode	
<b>Usage Guide</b>	This command is used to configure the KAT interval of RP.	
<b>Configuration Examples</b>	The following example sets the KAT interval on the RP to 250 seconds.	
<b>Examples</b>	<pre>Ruijie(config)# ip pim rp-register-kat 250</pre>	
<b>Related Commands</b>	Command	Description
	N/A	N/A
<b>Platform Description</b>	N/A	

## 4.27 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**

<b>Parameter Description</b>	Parameter	Description
	N/A	N/A
<b>Defaults</b>	This function is disabled by default.	
<b>Command Mode</b>	Interface configuration mode	
<b>Usage Guide</b>	This command is used to enable PIM-SM on the interface.	
	<p> 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.</p>	
	<p> During the execution of this command, if the prompt "Failed to enable PIM-SM on &lt;Interface</p>	

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** The following example enables PIM-SM on the interface.

**Examples**

```
Ruijie(config)# interface gi 0/3
Ruijie(config-if-GigabitEthernet 0/3)# ip pim sparse-mode
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 4.28 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
<i>access_list</i>	(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** The following example enables the SPT switching function.

**Examples**

```
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
	<b>access-list</b>	N/A

**Platform** N/A  
**Description**

## 4.29 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
	<b>default</b>	Multicast groups of 232/8
	<b>range access_list</b>	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(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** N/A  
**Description**

## 4.30 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
	<i>seconds</i>	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** The following command sets the triggered-hello-delay to 3 seconds.

**Examples**

```
Ruijie(config)# interface gi 0/3
Ruijie(config-if-GigabitEthernet 0/3)# ip pim triggered-hello-delay 3
```

Related Commands	Command	Description
	N/A	N/A

**Platform  
Description** N/A

## 4.31 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** The following example displays the debugging status.

**Examples**

```
Ruijie#show debugging
ip packet debug:
ip packet debug debugging is on, acl: 0
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 4.32 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
00:00:32
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

### 4.33 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
	<i>interface-type</i>	(Optional) Interface name. This command takes effect for all interfaces by default.
	<i>interface-number</i>	
	<b>detail</b>	(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** The following example displays the PIM-SM information on the interface.

**Examples**

```
Ruijie#show ip pim sparse-mode interface detail
GigabitEthernet 0/3 (vif 3):
Address 30.30.100.200, DR 30.30.100.200
Hello period 30 seconds, Next Hello in 11 seconds
Triggered Hello period 5 seconds
Neighbors:
2.2.2.2
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 4.34 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
	<i>interface-type</i> <i>interface-number</i>	(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

## 4.35 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* ] ] [ **proxy** ]

Parameter Description	Parameter	Description
	<i>group-or-source-address</i>	Group IP address or source IP address. Two addresses cannot both be the group addresses or the source addresses.
	<b>proxy</b>	RPF vector information.

**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

## 4.36 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
<b>detail</b>	(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
```

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 4.37 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** N/A

**Configuration Examples** The following example displays the next-hop information.

```
Ruijie# show ip pim sparse-mode nexthop
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 4.38 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
	<i>group-address</i>	Group address to be resolved

**Defaults** N/A

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

**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.

**n Examples**

```
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** N/A  
**Description**

## 4.39 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 { *address* | *mapping* }**

**Parameter  
Description**

Parameter	Description
<i>mapping</i>	All group and RP information
<i>address</i>	Specifies an RP.

**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 on all RPs and the multicast groups they serve.

**Examples**

```
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** N/A

**Description**

## 4.40 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

**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  
Description**

N/A



## 5 IGMP Snooping Commands

### 5.1 clear ip igmp snooping gda-table

Use this command to clear the Group Destination Address (GDA) table.

**clear ip igmp snooping gda-table**

Parameter Description	Parameter	Description
	N/A	N/A
Defaults	N/A	
Command Mode	Privileged EXEC mode	
Usage Guide	The IGMP Snooping GDA table contains VLAN IDs (VIDs), group addresses, routing interface (static or dynamic) ID, and member interface ID. Among them, the VID and group address identify a forwarding entry; the static routing interfaces will not age and cannot be deleted by using the <b>clear ip igmp snooping gda-table</b> command.	
Configuration Examples	The following example clears the Group Destination Address (GDA) table. <pre>Ruijie# clear ip igmp snooping gda-table</pre>	
Platform Description	N/A	

### 5.2 clear ip igmp snooping statistics

Use this command to clear IGMP Snooping statistics.

**clear ip igmp snooping 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 IGMP Snooping statistics, which can be displayed by using the **show ip igmp snooping statistics** command.

**Configuration** The following example clears the IGMP Snooping statistics.

**Examples**

```
Ruijie# clear ip igmp snooping statistics
```

**Platform** N/A

**Description**

## 5.3 deny

Use this command to deny the forwarding of the multicast streams in the range specified by the profile.  
**deny**

Parameter Description	Parameter	Description
	N/A	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 take effect.

**Configuration** The following is an example of deny the forwarding of the multicast stream 224.2.2.2 to 224.2.2.244.

**Examples**

```
Ruijie(config)# ip igmp profile 1
Ruijie(config-profile)# range 224.2.2.2 224.2.2.244
Ruijie(config-profile)# deny
```

**Platform** N/A

**Description**

## 5.4 ip igmp profile

Use this command to create a profile and enter the IGMP profile configuration mode.

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

**ip igmp profile** *profile-number*

**no ip igmp profile** *profile-number*

**default ip igmp profile** *profile-number*

Parameter	Parameter	Description
-----------	-----------	-------------

<b>Description</b>		
	<i>profile-number</i>	Profile number, in the range from 1 to 1024
<b>Defaults</b>	No profile is created by default.	
<b>Command Mode</b>	Global configuration mode	
<b>Usage Guide</b>	<p>The profile is a filter to permit/deny specified groups in the following steps:</p> <ul style="list-style-type: none"><li>● Use the <b>ip igmp profile</b> command to create a profile and enter profile configuration mode.</li><li>● Use the <b>range</b> command to define a profile range.</li><li>● Use the <b>permit</b> command to permit this profile in the filtering, or use the <b>deny</b> command to deny this profile in the filtering.</li><li>● If the <b>deny</b> command is used without any profile specified, all profiles in the profile are permitted.</li><li>● If the <b>permit</b> command is used without any profile specified, all profiles in the profile are denied.</li></ul>	
<b>Configuration Examples</b>	<p>The following example creates and permits profile 1 with addresses from 224.2.2.2 to 224.2.2.244.</p> <pre>Ruijie(config)# ip igmp profile 1 Ruijie(config-profile)# range 224.2.2.2 224.2.2.244 Ruijie(config-profile)# permit</pre>	
<b>Platform</b>	N/A	
<b>Description</b>		

## 5.5 ip igmp snooping

Use this command to enable IGMP snooping and enter the IVGL mode.

**ip igmp snooping ivgl**

Use the **no** or **default** command to restore the default setting.

**no ip igmp snooping**

**default ip igmp snooping**

<b>Parameter Description</b>	Parameter	Description
	N/A	N/A
<b>Defaults</b>	IGMP Snooping is disabled by default.	
<b>Command Mode</b>	Global configuration mode	
<b>Usage Guide</b>	<p><b>IVGL (Independent VLAN Group Learning):</b> In this mode, the multicast flows in different VLANs are independent. A host can only request multicast flows to the router interface in the same VLAN. Upon receiving the multicast flow in any VLAN, the switch forwards the flow to the member port in the same</p>	

VLAN.

**Configuration** The following example enables IGMP Snooping and enters the IVGL mode.

**Examples** Ruijie(config)# ip igmp snooping ivgl

**Platform** N/A

**Description**

## 5.6 ip igmp snooping dyn-mr-aging-time

Use this command to set the aging time of a dynamic routing interface.

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

**ip igmp snooping dyn-mr-aging-time** *seconds*

**no ip igmp snooping dyn-mr-aging-time**

**default ip igmp snooping dyn-mr-aging-time**

**Parameter  
Description**

Parameter	Description
<i>seconds</i>	Aging time from 1 to 3,600 in the unit of seconds

**Defaults** The default is 300 seconds.

**Command  
Mode** Global configuration mode

**Usage Guide** If a dynamic routing interface does not receive IGMP query packets or PIM hello packets before aged, this interface will be deleted.

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** The following example sets the aging time of the routing interface that the switch learns dynamically to 100 seconds.

Ruijie(config)# ip igmp snooping dyn-mr-aging-time 100

**Platform** N/A

**Description**

## 5.7 ip igmp snooping fast-leave enable

Use this command to enable the fast leave function.

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

**ip igmp snooping fast-leave enable**

**no ip igmp snooping fast-leave enable**

**default ip igmp 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** 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** The following example enables the fast leave function.

**Examples** Ruijie(config)# ip igmp snooping fast-leave

**Platform** N/A

**Description**

## 5.8 ip igmp snooping filter

Use this command to specify the profile for ports.

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

**ip igmp snooping filter** *profile-number*

**no ip igmp snooping filter** *profile-number*

**default ip igmp snooping filter**

Use this command to specify the profile for VLANs.

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

**ip igmp snooping vlan** *vlan-id* **filter** *profile-number*

**no ip igmp snooping vlan** *vlan-id* **filter**

**default ip igmp snooping vlan** *vlan-id* **filter**

Parameter Description	Parameter	Description

<i>profile-number</i>	Profile number from 1 to 1024
-----------------------	-------------------------------

**Defaults** This function is disabled by default.

**Command Mode** Global configuration mode/Interface configuration mode

**Usage Guide** A specific profile must be created before association.

**Configuration Examples** The following example specifies profile 1 for interface fastEthernet 0/1.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip igmp snooping filter 1
```

**Platform Description** N/A

## 5.9 ip igmp snooping host-aging-time

Use this command to configure the aging time of IGMP dynamic ports.

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

**ip igmp snooping host-aging-time** *seconds*

**no ip igmp snooping host-aging-time**

**default ip igmp snooping host-aging-time**

Parameter	Parameter	Description
Description	<i>seconds</i>	Aging time. The unit is second. The value ranges from 1 to 65,535.

**Defaults** The default is 260 seconds.

**Command Mode** Global configuration mode

**Usage Guide** 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.

**Configuration Examples** The following example sets the aging time to 30 seconds.

```
Ruijie(config)# ip igmp snooping host-aging-time 30
```

Related Commands	Command	Description
	N/A	N/A

Platform N/A  
Description

## 5.10 ip igmp snooping l2-entry-limit

Use this command to set the maximum number of multicast groups.

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

**ip igmp snooping l2-entry-limit** *number*

**no ip igmp snooping l2-entry-limit**

**default ip igmp snooping l2-entry-limit**

Parameter Description	Parameter	Description
	<i>number</i>	Number of multicast groups. The value ranges from 0 to 65,536.

Defaults The default is 65,536.

Command Mode Global configuration mode

Usage Guide 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.

Configuration The following example sets the maximum number of multicast groups to 2000.

Examples Ruijie(config)# ip igmp snooping l2-entry-limit 2000

Related Commands	Command	Description
	<b>show ip igmp snooping</b>	Displays the maximum number of multicast groups.

Platform Description N/A

## 5.11 ip igmp snooping limit-ipmc


Use this command to add a multicast source IP address check entry.

Use the **no** or **default** 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*

**default ip igmp snooping limit-ipmc vlan** *vid address gaddress server saddress*

Parameter Description	Parameter	Description
	<i>vid</i>	VLAN ID
	<i>group-address</i>	Multicast group address
	<i>source-address</i>	Multicast source IP address
<b>Defaults</b>	Only source IP address check is enabled by default.	
<b>Command Mode</b>	Global configuration mode	
<b>Usage Guide</b>	<p>This command is used to filter the multicast packets. With it enabled, all multicast packets from illegal IP addresses will be discarded.</p> <hr/> <p> Source IP address check and multicast routing function cannot be enabled meanwhile.</p> <hr/> <p>Configuration steps:</p> <ol style="list-style-type: none"> <li>1. Enable source IP address check and specify the source IP address.</li> <li>2. (Optional) Specify the multicast group address and source IP address for a specific VLAN.</li> </ol>	
<b>Configuration Examples</b>	<p>The following example enables source address check to receive multicast packets only from 192.168.1.10 and allows packets into VLAN 203 and VLAN 104 from (192.168.1.10 , 229.1.1.1).</p> <pre>Ruijie# configure terminal Ruijie(config)# ip igmp snooping source-check default-server 192.168.1.10 Ruijie(config)# ip igmp snooping limit-ipmc vlan 203 address 229.1.1.1 server 192.168.1.10 Ruijie(config)# ip igmp snooping limit-ipmc vlan 204 address 229.1.1.1 server 192.168.1.10 Ruijie(config)# end</pre>	
<b>Platform Description</b>	N/A	

## 5.12 ip igmp snooping max-groups

Use this command to configure the maximum number of groups that can be added dynamically to this interface.

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

**ip igmp snooping max-groups** *number*

**no ip igmp snooping max-groups**

**default ip igmp snooping max-groups**

Parameter Description	Parameter	Description
	<i>number</i>	The maximum group number from 0 to 1,024



**Defaults** No maximum group number is configured by default.

**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 Ethernet 0/1
Ruijie(config-if)# ip igmp snooping max-group 100
```

**Platform Description** N/A

## 5.13 ip igmp snooping mrouter learn pim-dvmrp

Use this command to configure a device to listen to the IGMP Query/Dvmrp or PIM Help packets dynamically in order to automatically identify a routing interface

Use the **no** form of this command to disable the dynamic learning.

Use the **default** form of this command to restore the default setting.

**ip igmp snooping mrouter learn pim-dvmrp**

**no ip igmp snooping mrouter learn pim-dvmrp**

**default ip igmp snooping [ vlan *vid* ] mrouter learn pim-dvmrp**

**Parameter Description**

Parameter	Description
<b>vlan <i>vid</i></b>	VLAN ID. By default, the specified version is supported on all VLANs.

**Defaults** This function is enabled by default.

**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** The following example enables the dynamic routing interface learning function on VLAN 1.

**Examples**

```
Ruijie(config)# no ip igmp snooping mrouter learn pim-dvmrp
Ruijie(config)# ip igmp snooping vlan 1 mrouter learn pim-dvmrp
```

**Platform** N/A

**Description**

## 5.14 ip igmp snooping preview

Use this command to allow the user to preview the specific multicast streams when the user doesn't have access to such multicast streams.

Use **no** or **default** form of this command to disable multicast preview.

**ip igmp snooping preview** *profile-number*

**no ip igmp snooping preview**

**default ip igmp snooping preview**

**Parameter  
Description**

Parameter	Description
<i>profile-number</i>	Profile number (1-1024)

**Defaults** This function is disabled by default.

**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 2 to the Ethernet 0/1 and associates multicast preview with profile 1.

```
Ruijie(config)# ip igmp snooping preview 1
Ruijie(config-if)# int Ethernet 0/1
Ruijie(config-if)# ip igmp snooping filter 2
```

**Platform** N/A

**Description**

## 5.15 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** or **default** form of this command to restore the default setting.

**ip igmp snooping preview interval** *seconds*

**no ip igmp snooping preview interval**

**default ip igmp snooping preview interval**

Parameter Description	Parameter	Description
	<i>seconds</i>	Preview interval from 1 to 300 in the unit of seconds
Defaults	The default is 60 seconds.	
Command Mode	Global configuration mode	
Usage Guide	N/A	
Configuration Examples	The following example sets the multicast preview interval as 100 seconds on the 100M port of 0/1: <pre>Ruijie(config)# ip igmp snooping preview 1 Ruijie(config)# ip igmp snooping preview interval 100</pre>	
Platform Description	N/A	

## 5.16 ip igmp snooping querier

Use this command to enable the IGMP querier.

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

**ip igmp snooping querier**

**no ip igmp snooping querier**

**default ip igmp snooping [ vlan *vid* ] querier**

Parameter Description	Parameter	Description
	<b>vlan</b> <i>vid</i>	VLAN ID. By default, the specified version is supported on all VLANs.
Defaults	This function is disabled by default.	
Command Mode	Global configuration mode	

**Usage Guide** After globally enabling the IGMP querier, you must enable the IGMP querier function in VLAN to activate this function.

If the IGMP querier function is disabled globally, the IGMP querier will be disabled in all VLANs.

**Configuration** The following example enables the IGMP querier function in VLAN 2.

**Examples**

```
Ruijie(config)# ip igmp snooping querier
Ruijie(config)# ip igmp snooping vlan 2 querier
```

**Platform** N/A

**Description**

## 5.17 ip igmp snooping querier address

Use this command to specify a source IP address for IGMP querier.

Use **no** or **default** form of this command to remove the source IP address configured.

**ip igmp snooping [ vlan *vid* ] querier address *a.b.c.d***

**no ip igmp snooping [ vlan *vid* ] querier address**

**default ip igmp snooping [ vlan *vid* ] querier address**

Parameter Description	Parameter	Description
	<b>vlan <i>vid</i></b>	VLAN ID. By default, the specified version is supported on all VLANs.
	<b><i>a.b.c.d</i></b>	Source IP address of the IGMP querier

**Defaults** N/A

**Command Mode** Global configuration mode

**Usage Guide** After enabling IGMP querier, you must configure a source IP address for the IGMP querier to activate this function..

If the IGMP querier source IP has been specified in VLAN, the source IP configured in the relevant VLAN will be used first.

**Configuration** The following example specifies the source IP of the IGMP querier as 1.1.1.1 on the device.

**Examples**

```
Ruijie(config)# ip igmp snooping querier address 1.1.1.1
```

The following example specifies the source IP of the IGMP querier as 1.1.1.1 in VLAN 3.

```
Ruijie(config)# ip igmp snooping vlan 3 querier address 1.1.1.1
```

**Platform**

**Description**

## 5.18 ip igmp snooping querier max-response-time

Use this command to configure the maximum response time of the IGMP querier.

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

**ip igmp snooping [ vlan *vid* ] querier max-response-time *seconds***

**no ip igmp snooping [ vlan *vid* ] querier max-response-time**

**default ip igmp snooping [ vlan *vid* ] querier max-response-time**

### Parameter Description

Parameter	Description
<i>num</i>	Maximum response time from 1 to 25 in the unit of seconds
<b>vlan</b> <i>vid</i>	VLAN ID. By default, the specified version is supported on all VLANs.

### Defaults

The default is 10 seconds.

### 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

The following example specifies the maximum response time of the IGMP querier on the device.

### Examples

```
Ruijie(config)# ip igmp snooping querier max-response-time 15
```

The following example specifies the maximum response time of the IGMP querier in VLAN 3.

```
Ruijie(config)# ip igmp snooping vlan 3 querier max-response-time 15
```

### Platform

N/A

### Description

## 5.19 ip igmp snooping querier query-interval

Use this command to specify the interval for IGMP querier to send query packets.

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

**ip igmp snooping querier query-interval *seconds***

**no ip igmp snooping querier query-interval**

**default ip igmp snooping [ vlan *vid* ] querier query-interval**

### Parameter Description

Parameter	Description
<i>seconds</i>	Query interval from 1 to 18,000 in the unit of seconds
<b>vlan</b> <i>vid</i>	VLAN ID. By default, the specified version is supported on all VLANs.

<b>Defaults</b>	The default is 60 seconds.
<b>Command Mode</b>	Global configuration mode
<b>Usage Guide</b>	If the query interval has been configured in the corresponding VLAN, the value specified in VLAN will be used first.
<b>Configuration Examples</b>	<p>The following example configures the query interval on the device.</p> <pre>Ruijie(config)# ip igmp snooping querier query-interval 100</pre> <p>The following example configures the query interval in VLAN 3.</p> <pre>Ruijie(config)# ip igmp snooping vlan 3 querier query-interval 100</pre>
<b>Platform</b>	N/A
<b>Description</b>	

## 5.20 ip igmp snooping querier timer expiry

Use this command to specify the expiration timer for non-querier.

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

**ip igmp snooping [ vlan vid ] querier timer expiry seconds**

**ip igmp snooping [ vlan vid ] querier timer expiry seconds**

**default ip igmp snooping [ vlan vid ] querier timer expiry**

Parameter Description	Parameter	Description
	<i>seconds</i>	The expiration timer from 60 to 300 in the unit of seconds
	<b>vlan vid</b>	VLAN ID. By default, the specified version is supported on all VLANs.

<b>Defaults</b>	The default is 125 seconds.
<b>Command Mode</b>	Global configuration mode
<b>Usage Guide</b>	<p>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.</p> <p>If expiration timer has been configured in the corresponding VLAN, the value specified in VLAN will be used first.</p>
<b>Configuration Examples</b>	<p>The following example configures the non-querier expiration timer on the device.</p> <pre>Ruijie(config)# ip igmp snooping querier timer expiry 60</pre> <p>The following example configures the non-querier expiration timer in VLAN 3.</p> <pre>Ruijie(config)# ip igmp snooping vlan 3 querier timer expiry 60</pre>

**Platform** N/A  
**Description**

## 5.21 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**

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 Description	Parameter	Description
	<b>vlan <i>vid</i></b>	VLAN ID. By default, the specified version is supported on all VLANs.

**Defaults** The default version is IGMPv2.

**Command Mode** Global configuration mode

**Usage Guide** IGMPv1 and IGMPv2 are supported.  
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
```

**Platform** N/A  
**Description**

## 5.22 ip igmp snooping query-max-response-time

Use this command to specify the time for the switch to wait for the member join message after receiving the **query** message.

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

**ip igmp snooping query-max-response-time *seconds***

**no ip igmp snooping query-max-resposne-time**

**default ip igmp snooping query-max-response-time**

Parameter Description	Parameter	Description
	<b><i>seconds</i></b>	The aging time of the routing interface that the switch learns dynamically,

	in the range from 1 to 65.535
--	-------------------------------

**Defaults** The default is 10 seconds.

**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** The following examples sets the aging time of the routing interface that the switch learns dynamically to 100 seconds.

```
Ruijie(config)# ip igmp snooping query-max-response-time 100
```

**Platform** N/A

**Description**

## 5.23 ip igmp snooping source-check default-server

Use this command to enable the source IP address check to permit one or several IPMC flows from the server of the specified IP address.

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

**ip igmp snooping source-check default-server** *source-address*

**no ip igmp snooping source-check**

**default ip igmp snooping source-check**

Parameter Description	Parameter	Description
	<i>source-address</i>	Default multicast source IP address

**Defaults** This function is disabled by default.

**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.

 Source IP address check and IP multicast function cannot work meanwhile.



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** The following example enables the multicast source IP address check function.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# ip igmp snooping source-check default-server 192.168.1.10
Ruijie(config)# ip igmp snooping limit-ipmc vlan 203 address 229.1.1.1 server 192.168.1.10
Ruijie(config)# ip igmp snooping limit-ipmc vlan 204 address 229.1.1.1 server 192.168.1.10
Ruijie(config)# end
```

**Platform** N/A

**Description**

## 5.24 ip igmp snooping source-check port

Use this command to enable the source port check function of IGMP Snooping.

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

**ip igmp snooping source-check port**

**no ip igmp snooping source-check port**

**default ip igmp snooping source-check port**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** This function is disabled by default.

**Command Mode** Global configuration mode

**Usage Guide** The source port check function is used to permit one or several IPMC flows from the mroute port. When it is enabled, only the IPMC streams from the specified port are permitted. When it is disabled, all the IPMC streams are permitted and forwarded.

**Configuration** The following example enables the source port check function of IGMP Snooping.

**Examples**

```
Ruijie(config)# ip igmp snooping source-check port
```

**Platform** N/A

**Description**

## 5.25 ip igmp snooping suppression enable

Use this command to enable IGMP snooping suppression.

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

**ip igmp snooping suppression enable**

**no ip igmp snooping suppression enable**

**default ip igmp snooping suppression enable**

Parameter Description	Parameter	Description
	N/A	N/A
Defaults	This function is disabled by default.	
Command Mode	Global configuration mode	
Usage Guide	When this function is enabled, IGMP Snooping only forwards the first report from a specific VLAN or group, and suppresses the following reports to constrain traffic in the networks. This function is only supported on IGMPv1 and IGMPv2 reports.	
Configuration Examples	The following example enables IGMP snooping suppression on the device. <pre>Ruijie(config)# ip igmp snooping suppression enable</pre>	
Platform Description	N/A	

## 5.26 ip igmp snooping tunnel

Use this command to enable 802.1Q tunneling (QinQ) support for IGMP Snooping.

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

**ip igmp snooping tunnel**

**no ip igmp snooping tunnel**

**default ip igmp snooping tunnel**

Parameter Description	Parameter	Description
	N/A	N/A
Defaults	This function 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:
- First: QinQ transmits IGMP packets transparently. Create multicast entries in the VLAN to which the IGMP packets belong, and forward IGMP packets in the 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 are allowed by 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.
  - Second: 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 are allowed 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 second way is used.

**Configuration** The following example enables QinQ support for IGMP Snooping.

**Examples** Ruijie(config)# ip igmp snooping tunnel

**Platform** N/A

**Description**

## 5.27 ip igmp snooping vlan

Use this command to enable the IGMP Snooping in the specified VLAN and enter IVGL mode.

Use the **no** form of this command is used to disable the IGMP Snooping.

Use the **default** form of this command to restore the default setting.

**ip igmp snooping vlan** *vid*

**no ip igmp snooping vlan** *vid*


**default ip igmp snooping vlan** *vid*

Parameter Description	Parameter	Description
	<i>vid</i>	VLAN ID in the range from 1 to 4,094

**Defaults** IGMP Snooping is disabled by default.

**Command Mode** Global configuration mode

**Usage Guide** Use this command to enable or disable the IGMP snooping on the specified vlan.

 The PIM Snooping in the specified VLAN works only when IGMP Snooping is configured. To disable PIM Snooping, you must disable IGMP Snooping in the VLAN first, or disabling will fail and be prompted.

**Configuration** The following example enters IVGL mode and disables the IGMP Snooping in the VLAN 2.

**Examples**

```
Ruijie(config)# ip igmp snooping ivgl
Ruijie(config)# no ip igmp snooping vlan 2
```

**Platform** N/A

**Description**

## 5.28 ip igmp snooping vlan mrouter interface

Use this command to configure a static routing interface.

Use the **no** form of this command to delete a static routing interface.

Use the **default** form of this command to restore the default setting.

**ip igmp snooping vlan** *vid* **mrouter interface** *interface-type interface-number*

**no ip igmp snooping vlan** *vid* **mrouter interface** *interface-type interface-number*

**default ip igmp snooping vlan** *vid* **mrouter interface** *interface-type interface-number*

Parameter Description	Parameter	Description
	<i>vid</i>	VLAN ID in the range from 1 to 4,094
	<i>interface-type</i>	Interface ID
	<i>interface-number</i>	

**Defaults** No static routing interface is configured by default.

**Command Mode** Global configuration mode

**Usage Guide** A dynamic routing interface is learned dynamically through IGMP Snooping. A static routing interface is configured by using this command and cannot age.

When an interface is configured as a static routing interface, all multicast streams received on this interface will be forwarded.

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** The following example configures a static routing interface.

**Examples**

```
Ruijie(config)# ip igmp snooping vlan 1 mrout erinterface fastEthernet 0/1
```

**Platform** N/A

**Description**

## 5.29 ip igmp snooping vlan static interface

Use this command to configure a static member interface of a multicast group.

Use the **no** form of this command to delete a static member interface from a multicast group.

Use the **default** form of this command to restore the default setting.

**ip igmp snooping vlan** *vid* **static** *group-address* **interface** *interface-type* *interface-number*

**no ip igmp snooping vlan** *vid* **static** *group-address* **interface** *interface-type* *interface-number*

**default ip igmp snooping vlan** *vid* **static** *group-address* **interface** *interface-type* *interface-number*

**Parameter  
Description**

Parameter	Description
<i>vid</i>	VLAN ID in the range from 1 to 4,094
<i>ip-addr</i>	Multicast IP address
<i>interface-id</i>	Interface ID

**Defaults**

No static member interface of any multicast group is configured by default.

**Command  
Mode**

Global configuration mode

**Usage Guide**

The IGMP Snooping GDA table contains VLAN IDs (VIDs), group addresses, routing interface (static or dynamic) ID, and member interface ID. Among them, the VID and group address identify a forwarding entry; the static routing interfaces will not age and cannot be deleted by using the **clear ip igmp snooping gda-table** command.

**Configuration**

The following example configures a static member interface for the multicast group 224.1.1.1.

**Examples**

```
Ruijie(config)# ip igmp snooping vlan 1 static 224.1.1.1 interface GigabitEthernet
0/1
```

**Platform  
Description**

N/A

## 5.30 permit

Use this command to permit the multicast forwarding for specified ranges of a specified profile.

**permit**

**Parameter  
Description**

Parameter	Description
N/A	N/A

<b>Defaults</b>	The forwarding of the multicast streams in the range specified by the profile is denied.
<b>Command Mode</b>	Profile configuration mode
<b>Usage Guide</b>	<p>A profile is used to filter a group of multicast packets, so as to assist other features.</p> <p>Configuration steps:</p> <ol style="list-style-type: none"> <li>1. Use the <b>ip igmp profile</b> command to create a profile and enter profile configuration mode.</li> <li>2. Use the <b>range</b> command to define a range for the profile.</li> <li>3. Use the <b>permit</b> command to permit the multicast forwarding for the profile.</li> </ol>
<b>Configuration Examples</b>	<p>The following example permits the forwarding of the multicast streams from 224.2.2.2 to 224.2.2.244 of profile 1.</p> <pre>Ruijie(config)# ip igmp profile 1 Ruijie(config-profile)# range 224.2.2.2 224.2.2.244 Ruijie(config-profile)# permit</pre>
<b>Platform</b>	N/A
<b>Description</b>	

## 5.31 range

Use this command to define a range for a specific profile.

Use the **no** form of the command to remove the range from the profile.

**range** *low-ip-address* [*high-ip-address*]

**no range** *low-ip-address* [*high-ip-address*]

Parameter Description	Parameter	Description
	<i>low-ip-address</i>	Start address of a range
	<i>high-ip-address</i>	End address of a range

<b>Defaults</b>	No range is defined for a profile by default.
<b>Command Mode</b>	Profile configuration mode
<b>Usage Guide</b>	<p>A profile is used to filter a group of multicast packets, so as to assist other features.</p> <p>Configuration steps:</p> <ol style="list-style-type: none"> <li>1. Use the <b>ip igmp profile</b> command to create a profile and enter profile configuration mode.</li> <li>2. Use the <b>range</b> command to define a range for the profile.</li> <li>3. Use the <b>permit</b> command to permit the multicast forwarding for the profile.</li> </ol>
<b>Configuration</b>	The following is an example of allowingpermits the forwarding of the multicast streams from 224.2.2.2 to

**Examples** 224.2.2.244: of profile 1.

```
Ruijie(config)# ip igmp profile 1
Ruijie(config-profile)# range 224.2.2.2 224.2.2.244 224.2.2.2
Ruijie(config-profile)# permit
```

**Platform** N/A

**Description**

## 5.32 show ip igmp profile

Use this command to display the profile information.

**show ip igmp profile**

**show ip igmp profile** *profile-number*

**Parameter  
Description**

Parameter	Description
<i>profile-number</i>	Displays configuration information of the designated profile.

**Defaults** N/A

**Command  
Mode** Privileged EXEC mode

**Usage Guide** Use this command to display the profile information.

**Configuration** The following example displays the profile information.

**Examples**

```
Ruijie(config-if)# show ip igmp profile
Profile 1
Permit
range 224.0.1.0, 239.255.255.255
```

## 5.33 show ip igmp snooping

Use this command to display related information of IGMP Snooping.

**show ip igmp snooping** [ **vlan** *vid* ]

**show ip igmp snooping gda-table**

**show ip igmp snooping interfaces** [ *interface-type interface-number* ]

**show ip igmp snooping mrouter**

**show ip igmp snooping statistics** [ **vlan** *vid* ]

**show ip igmp snooping querier** [ **detail** | **vlan** *vid* ]

**Parameter  
Description**

Parameter	Description
-----------	-------------

<b>vlan vid</b>	VLAN ID. By default, IGMP Snooping information of all VLANs are displayed.
<i>interface-type</i> <i>interface-number</i>	Interface type and number

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays global IGMP Snooping information.

**Examples**

```
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 Global Querier: Disable
IGMP Preview: Disable
IGMP Tunnel: Disable
IGMP Snooping version: 2
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 Response 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
```



<b>Platform</b>	N/A
<b>Description</b>	



## Security Configuration Commands

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- 1 AAA Commands
- 2 RADIUS Commands
- 3 TACACS+ Commands
- 4 SCC Commands
- 5 Password-Policy Commands
- 6 Storm Control Commands
- 7 SSH Commands
- 8 CPU Protection Commands
- 9 NFPP Commands
- 10 DoS Protection Commands

# 1 AAA Commands

## 1.1 aaa accounting commands

Use this command to configure 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	Parameter	Description
Description	<i>level</i>	The accounting command level, 0-15. The message shall be recorded before which command level is executed is determined.
	<b>default</b>	When this parameter is used, the following defined method list is used as the default method for command accounting.
	<i>list-name</i>	Name of the command accounting method list, which could be any character strings.
	<i>method</i>	It must be one of the keywords listed in the following table. One method list can contain up to four methods.
	<b>none</b>	Does not perform accounting.
	<b>group</b>	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** The following example enables NAS command accounting.

**Examples** Ruijie(config)# aaa accounting commands 15 default start-stop group tacacs+

Related Commands	Command	Description
	<b>aaa new-model</b>	Enables the AAA security service.
	<b>aaa authentication</b>	Defines AAA authentication.
	<b>accounting commands</b>	Applies the accounting commands to the terminal line.

**Platform** N/A

**Description**

## 1.2 aaa accounting exec

Use this command to enable NAS access accounting.

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	Parameter	Description
Description	<b>default</b>	When this parameter is used, the following defined method list is used as the default method for Exec accounting.
	<i>list-name</i>	Name of the Exec accounting method list, which could be any character strings
	<i>method</i>	It must be one of the keywords: <b>none</b> and <b>group</b> . One method list can contain up to four methods.
	<b>none</b>	Does not perform accounting.
	<b>group</b>	Uses the server group for accounting, the RADIUS and TACACS+ server group is supported.

**Defaults** This function is disabled by default.

**Command** Global configuration mode

**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** The following example enables NAS access accounting.

**Examples** Ruijie(config)# aaa accounting network start-stop group radius

Related	Command	Description
Commands	<b>aaa new-model</b>	Enables the AAA security service.
	<b>aaa authentication</b>	Defines AAA authentication.
	<b>accounting commands</b>	Applies the Exec accounting to the terminal line.

Platform N/A

Description

## 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
	<b>default</b>	When this parameter is used, the following defined method list is used as the default method for Network accounting.
	<i>list-name</i>	Name of the accounting method list
	<i>method</i>	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.
	<b>none</b>	Does not perform accounting.
	<b>group</b>	Uses the server group for accounting, the RADIUS and TACACS+ server group is supported.

**Defaults** This function is disabled by default.

**Command** Global configuration mode  
**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** The following example enables network access accounting.

**Examples** Ruijie(config)# aaa accounting network start-stop group radius

Related Commands	Command	Description
	<b>aaa new-model</b>	Enables the AAA security service.
	<b>aaa authorization network</b>	Defines a network authorization method list.
	<b>aaa authentication</b>	Defines AAA authentication.
	<b>username</b>	Defines a local user database.

Platform N/A

Description

## 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**

N/A

**Description**

**Defaults**

This function is disabled by default.

**Command**

Global configuration mode

**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**

The following example enables the accounting update function.

**Examples**

```
Ruijie(config)# aaa new-model
Ruijie(config)# aaa accounting update
```

**Related**

**Commands**

Command	Description
<b>aaa new-model</b>	Enables the AAA security service.
<b>aaa accounting network</b>	Defines a network accounting method list.

**Platform**

N/A

**Description**

## 1.5 aaa accounting update periodic

Use this command to set the interval of sending 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
<i>interval</i>	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**

Global configuration mode

**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** The following example sets the interval of accounting update to 1 minute.

**Examples**

```
Ruijie(config)# aaa new-model
Ruijie(config)# aaa accounting update
Ruijie(config)# aaa accounting update periodic 1
```

Related Commands	Command	Description
	<b>aaa new-model</b>	Enables the AAA security service.
	<b>aaa accounting network</b>	Defines a network accounting method list.

**Platform** N/A

**Description**

## 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** *method1* [*method2...*]

**no aaa authentication enable default**

Parameter Description	Parameter	Description
	<b>default</b>	When this parameter is used, the following defined authentication method list is used as the default method for Enable authentication.
	<i>method</i>	It must be one of the keywords: <b>local</b> , <b>none</b> and <b>group</b> . One method list can contain up to four methods.
	<b>local</b>	Uses the local user name database for authentication.
	<b>none</b>	Does not perform authentication.
	<b>group</b>	Uses the server group for authentication. At present, the RADIUS and TACACS+ server groups are supported.
	<b>enable</b>	Enables AAA Enable authentication.

**Defaults** N/A

**Command** Global configuration mode

**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
	<b>aaa new-model</b>	Enables the AAA security service.
	<b>enable</b>	Switchover the user level.
	<b>username</b>	Defines a local user database.

**Platform** N/A

**Description**

## 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
	<b>default</b>	When this parameter is used, the following defined authentication method list is used as the default method for Login authentication.
	<i>list-name</i>	Name of the user authentication method list, which could be any character strings
	<i>method</i>	It must be one of the keywords: <b>local</b> , <b>none</b> , and <b>group</b> . One method list can contain up to four methods.
	<b>local</b>	Uses the local user name database for authentication.
	<b>none</b>	Does not perform authentication.
	<b>group</b>	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 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 Examples** The following example defines an AAA Login authentication method list named list-1. 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 login list-1 group radius local
```

Related Commands	Command	Description
	<b>aaa new-model</b>	Enables the AAA security service.
	<b>login authentication</b>	Applies the Login authentication method to the terminal lines.
	<b>username</b>	Defines a local user database.

**Platform** N/A

**Description**

## 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
	<b>default</b>	When this parameter is used, the following defined authentication method list is used as the default method for PPP user authentication.
	<i>list-name</i>	Name of the user authentication method list, which could be any character strings
	<i>method</i>	It must be one of the keywords: <b>local</b> , <b>none</b> , <b>group</b> and <b>subs</b> . One method list can contain up to four methods.
	<b>local</b>	Uses the local user name database for authentication.
	<b>none</b>	Does not perform authentication.
	<b>group</b>	Uses the server group for authentication. At present, the RADIUS server group is supported.
	<b>subs</b>	Uses the subs database for authentication.

**Defaults** N/A

**Command** Global configuration mode

**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
	<b>aaa new-model</b>	Enables the AAA security service.
	<b>ppp authentication</b>	Associates a specific method list with the PPP user.
	<b>username</b>	Defines a local user database.

**Platform** N/A

**Description**

## 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
	<b>default</b>	When this parameter is used, the following defined authentication method list is used as the default method for SSL VPN user authentication.
	<i>list-name</i>	Name of SSL VPN user authentication method list, which could be any character strings
	<i>method</i>	It must be one of the keywords: <b>local</b> , <b>none</b> , <b>subs</b> and <b>group</b> . One method list can contain up to four methods.
	<b>local</b>	Use the local user name database for authentication.
	<b>none</b>	Does not perform authentication.
	<b>group</b>	Uses the server group for authentication. At present, the RADIUS server group is supported.
	<b>subs</b>	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
	<i>level</i>	Command level to be authorized in the range from 0 to 15
	<b>default</b>	When this parameter is used, the following defined method list is used as the default method for command authorization.
	<i>list-name</i>	Name of the user authorization method list, which could be any character strings
	<i>method</i>	It must be one of the keywords: <b>none</b> and <b>group</b> . One method list can contain up to four methods.
	<b>none</b>	Do not perform authorization.
	<b>group</b>	Uses the server group for authorization. At present, the TACACS+ server group is supported.

**Defaults** This function is disabled by default.

**Command** Global configuration mode  
**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** The following example uses the TACACS+ server to authorize the level 15 command.

**Examples** 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** N/A  
**Description**

## 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 restore the default setting.

**aaa authorization config-commands**

**no aaa authorization config-commands**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** This function is disabled by default.

**Command** Global configuration mode  
**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** The following example enables the configuration command authorization function.

**Examples** Ruijie(config)# aaa authorization config-commands

Related Commands	Command	Description
	<b>aaa new-model</b>	Enables the AAA security service.
	<b>aaa authorization commands</b>	Defines the AAA command authorization.

**Platform** N/A

**Description**

## 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** The following example enables the aaa authorization console function.

**Examples**  
`Ruijie(config)# aaa authorization console`

Related Commands	Command	Description
	<b>aaa new-model</b>	Enables the AAA security service.
	<b>aaa authorization commands</b>	Defines the AAA command authorization.
	<b>authorization commands</b>	Applies the command authorization to the terminal line.

**Platform** N/A

**Description**

## 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
	<b>default</b>	When this parameter is used, the following defined method list is used as the default method for Exec authorization.
	<i>list-name</i>	Name of the user authorization method list, which could be any character strings
	<i>method</i>	It must be one of the keywords listed in the following table. One method list can contain up to four methods.
	<b>local</b>	Uses the local user name database for authorization.
	<b>none</b>	Does not perform authorization.
	<b>group</b>	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 cannot 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
	<b>aaa new-model</b>	Enables the AAA security service.
	<b>authorization exec</b>	Applies the command authorization to the terminal line.
	<b>username</b>	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
	<b>default</b>	When this parameter is used, the following defined method list is used as the default method for Network authorization.
	<i>method</i>	It must be one of the keywords: none and group. One method list can contain up to four methods.
	<b>none</b>	Does not perform authorization.
	<b>group</b>	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** The following example uses the RADIUS server to authorize network services.

**Examples** Ruijie(config)# aaa authorization network default group radius

Related Commands	Command	Description
	<b>aaa new-model</b>	Enables the AAA security service.
	<b>aaa accounting</b>	Defines AAA accounting.
	<b>aaa authentication</b>	Defines AAA authentication.
	<b>username</b>	Defines a local user database.

**Platform** N/A

**Description**

## 1.15 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	Parameter	Description
Description	<b>default</b>	Uses this parameter to configure the default domain.
	<i>domain-name</i>	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** The following example configures the domain name.

**Examples**

```
Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)#
```

Related Commands	Command	Description
	<b>aaa new-model</b>	Enables the AAA security service.
	<b>aaa domain enable</b>	Enables the domain-name-based AAA service.
	<b>show aaa domain</b>	Displays the domain configuration.

**Platform** N/A

**Description**

## 1.16 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	Parameter	Description
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** The following example enables the domain-name-based AAA service.

**Examples** 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** N/A

**Description**

## 1.17 aaa local authentication attempts

Use this command to set login attempt times.

**aaa local authentication attempts** *max-attempts*

Parameter	Parameter	Description
Description	<i>max-attempts</i>	In the range from 1 to 2,147,483,647

**Defaults** The default is 3.

**Command Mode** Global configuration mode

**Usage Guide** Use this command to configure login attempt times.

**Configuration** The following example sets login attempt times to 6.

**Examples** 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** N/A

**Description**

## 1.18 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 logout-time** *logout-time*

Parameter	Parameter	Description
Description	<i>logout-time</i>	In the range from 1 to 2,147,483,647 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 logout-time when the login user has attempted for more than the limited times.

**Configuration Examples** The following example sets the logout-time period to 5 minutes.

```
Ruijie#configure terminal
Ruijie(config)#aaa local authentication logout-time 5
```

Related Commands	Command	Description
	<b>show running-config</b>	Displays the current configuration of the switch.
	<b>show aaa logout</b>	Displays the logout configuration parameter of current login.

**Platform Description** N/A

## 1.19 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 restore the default setting.

**aaa log enable**  
**no aaa log enable**

Parameter	Parameter	Description
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 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** N/A  
**Description**

## 1.20 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
	<i>num</i>	The number of syslog entries printed per second. The range is from 0 to 65,535. 0 indicates the printing rate is not limited.

**Defaults** The default is 5.

**Command Mode** Global configuration mode

**Usage Guide** Too much printing may flood the screen or even reduce device performance. In this case, use this command to adjust the printing rate.

**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** N/A  
**Description**

## 1.21 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	Parameter	Description
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
	<b>aaa authentication</b>	Defines a user authentication method list.
	<b>aaa authorization</b>	Defines a user authorization method list.
	<b>aaa accounting</b>	Defines a user accounting method list.

**Platform Description** N/A

## 1.22 access-limit

Use this command to configure the number of users limit for the domain, which is only valid for the IEEE802.1 users.

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

**access-limit** *num*

**no access-limit**

Parameter	Parameter	Description
Description	<i>num</i>	The number used for the user limitation is only valid for the IEEE802.1 users.

**Defaults** By default, no number of users is limited.

**Command Mode** Domain configuration mode

**Usage Guide** This command limits the number of users for the domain.

**Configuration Examples** The following example sets the number of users to 20 for the domain named ruijie.com.

```
Ruijie(config)# aaa domain ruijie.com
```

```
Ruijie(config-aaa-domain)# access-limit 2
```

**Related  
Commands**

Command	Description
<b>aaa new-model</b>	Enables the AAA security service.
<b>aaa domain enable</b>	Switchover the user level.
<b>show aaa domain</b>	Defines a local user database.

**Platform** N/A  
**Description**

## 1.23 accounting network

Use this command to configure the Network accounting list.

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

**accounting network { default | list-name }**

**no accounting network**

**Parameter  
Description**

Parameter	Description
<b>default</b>	Uses this parameter to specify the default method list.
<i>list-name</i>	The name of the network accounting 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 Network accounting method list for the specified domain.

**Configuration  
Examples** The following example sets the Network accounting method list for the specified domain.

```
Ruijie(config)# aaa domain ruijie.com  
Ruijie(config-aaa-domain)# accounting network default
```

**Related  
Commands**

Command	Description
<b>aaa new-model</b>	Enables the AAA security service.
<b>aaa domain enable</b>	Enables the domain-name-based AAA service.
<b>show aaa domain</b>	Displays the domain configuration.

**Platform** N/A  
**Description**

## 1.24 authentication dot1x

Use this command to configure the IEEE802.1x authentication list.

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

**authentication dot1x** { **default** | *list-name* }

**no authentication dot1x**

Parameter	Parameter	Description
Description	<b>default</b>	Uses this parameter to specify the default method list
	<i>list-name</i>	The name of the specified 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 IEEE802.1x authentication method list for the domain.

**Configuration Examples** The following example sets an IEEE802.1x authentication method list for the specified domain.

```
Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)# authentication dot1x default
```

Related Commands	Command	Description
	<b>aaa new-model</b>	Enables the AAA security service.
	<b>aaa domain enable</b>	Enables the domain-name-based AAA service.
	<b>show aaa domain</b>	Displays the domain configuration.

**Platform** N/A

**Description**

## 1.25 authorization network

Use this command to configure the Network authorization list.

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

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

**no authorization network**

Parameter	Parameter	Description
Description	<b>default</b>	Uses this parameter to specify the default method list.
	<i>list-name</i>	The name of the specified 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** Domain configuration mode  
**Mode**

**Usage Guide** Specify an authorization method list for the domain.

**Configuration** The following example sets an authorization method list for the specified domain.

**Examples**

```
Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)# authorization network default
```

Related Commands	Command	Description
	<b>aaa new-model</b>	Enables the AAA security service.
	<b>aaa domain enable</b>	Enables the domain-name-based AAA service.
	<b>show aaa domain</b>	Displays the domain configuration.

**Platform** N/A  
**Description**

## 1.26 clear aaa local user logout

Use this command to clear the logout user list.

**clear aaa local user logout { all | user-name word }**

Parameter Description	Parameter	Description
	<b>all</b>	Indicates all locked users.
	<b>user-name word</b>	Indicates the ID of the locked User.

**Defaults** N/A

**Command** Privileged EXEC mode  
**Mode**

**Usage Guide** Use this command to clear all the user lists or a specified user list.

**Configuration** The following example clears the logout user list.

**Examples**

```
Ruijie(config)# clear aaa local user logout all
```

Related Commands	Command	Description
	<b>show running-config</b>	Displays the current configuration of the switch.
	<b>show aaa logout</b>	Displays the logout configuration parameter of current login.

**Platform** N/A

**Description**

## 1.27 show aaa accounting update

Use this command to display the accounting update information.

**show aaa accounting update**

Parameter	Parameter	Description
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
	<b>aaa new-model</b>	Enables the AAA security service.
	<b>aaa domain enable</b>	Enables the domain-name-based AAA service.

**Platform Description** N/A

## 1.28 show aaa domain

Use this command to display all current domain information.

**show aaa domain [ default | domain-name ]**

Parameter	Parameter	Description
Description	<b>default</b>	Displays the default domain.
	<i>domain-name</i>	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** The following example displays the domain named domain.com.

**Examples**

```
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 Commands	Command	Description
	<b>aaa new-model</b>	Enables the AAA security service.
	<b>aaa domain enable</b>	Enables the domain-name-based AAA service.

**Platform** N/A

**Description**

## 1.29 show aaa logout

Use this command to display the logout configuration.

**show aaa logout**

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 logout configuration.

**Configuration** The following example displays the logout configuration.

**Examples**

```
Ruijie# show aaa logout
Lock tries:      3
Lock timeout:   15 minutes
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 1.30 show aaa group

Use this command to display all the server groups configured for AAA.

**show aaa group**

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** The following command displays all the server groups.

**Examples**

```
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	Command	Description
Commands	aaa group server	Configures the AAA server group.

**Platform Description** N/A

## 1.31 show aaa method-list

Use this command to display all AAA method lists.

**show aaa method-list**

Parameter	Parameter	Description
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** The following example displays the AAA method list.

**Examples**

```
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 authorization network default group radius
```

Related Commands	Command	Description
	<b>aaa authentication</b>	Defines a user authentication method list
	<b>aaa authorization</b>	Defines a user authorization method list
	<b>aaa accounting</b>	Defines a user accounting method list

**Platform** N/A

**Description**

## 1.32 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
	<b>all</b>	Displays all AAA user information.
	<b>lockout</b>	Displays the locked AAA user information.
	<b>by-id</b> <i>session-id</i>	Displays the information of the AAA user that with a specified session ID.
	<b>by-name</b> <i>user-name</i>	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** The following example displays AAA user information.

**Examples**

```
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 logout

Name                                Tries      Lock      Timeout (min)
-----
Ruijie#
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 1.33 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
	<b>block</b>	The configured domain is invalid.
	<b>active</b>	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** The following example sets the configured domain to be invalid.

**Examples**

```
Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)# state block
```

Related Commands	Command	Description
	<b>aaa new-model</b>	Enables the AAA security service.
	<b>aaa domain enable</b>	Enables the domain-name-based AAA service.
	<b>show aaa domain enable</b>	Displays the domain configuration.

**Platform** N/A

**Description**

## 1.34 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
	<b>without-domain</b>	Sets the user name without the domain information.
	<b>with-domain</b>	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** The following example sets the user name without the domain information.

**Examples**

```
Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)# username-domain without-domain
```

Related Commands	Command	Description
	<b>aaa new-model</b>	Enables the AAA security service.
	<b>aaa domain enable</b>	Enables the domain-name-based AAA service.
	<b>show aaa domain</b>	Displays the domain configuration.

**Platform** N/A  
**Description**

## 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
	<i>name</i>	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** The following example configures a RADIUS AAA server group named ss.

**Examples**

```
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** N/A

**Description**

### 2.2 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
	<i>mgmt_name</i>	MGMT port name

**Defaults** N/A

**Command Mode** TACACS+ server group configuration 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

## 2.3 ip radius source-interface

Use this command to specify the source IP address for the RADIUS packet.

Use the **no** form of this command to delete the source IP address for the RADIUS packet.

**ip radius source-interface** *interface-name*

**no radius source-interface** *interface-name*

Parameter Description	Parameter	Description
	<i>interface-name</i>	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** Global configuration mode  
**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
<b>radius-server host</b>	Defines the RADIUS server.
<b>ip address</b>	Configures the IP address of the interface.

**Platform** N/A  
**Description**

## 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
<i>vrf_name</i>	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** N/A**Description**

## 2.5 radius attribute

Use this command to set the private attribute type value.

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

**radius attribute** { *id* | **down-rate-limit** | **dscp** | **mac-limit** | **up-rate-limit** } **vendor-type** *type*

**no radius attribute** { *id* | **down-rate-limit** | **dscp** | **mac-limit** | **up-rate-limit** } **vendor-type**

**Parameter  
Description**

Parameter	Description
<i>id</i>	Function ID, in the range from 1 to 255
<i>type</i>	Private attribute type, in the range from 1 to 255.

**Defaults**

Only the default configuration of private attributes in Ruijie is recognized.

id	Function	type
1	max down-rate	1
2	qos	2
3	user ip	3
4	vlan id	4
5	version to client	5
6	net ip	6
7	user name	7
8	password	8
9	file-directory	9
10	file-count	10
11	file-name-0	11
2	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	version to server	17
18	flux-max-high32	18
19	flux-max-low32	19
20	proxy-avoid	20
21	dailup-avoid	21
22	ip privilege	22
23	login privilege	42

Extended attributes:

id	Function	type
1	max down-rate	76
2	qos	77
3	user ip	3
4	vlan id	4
5	version to client	5
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	75
17	version to server	17
18	flux-max-high32	18
19	flux-max-low32	19
20	proxy-avoid	20
21	dailup-avoid	21
22	ip privilege	22
23	login privilege	42
24	limit to user number	50

**Command** Global configuration mode  
**Mode**

**Usage** This command is used to configure the private attribute type value.  
**Guide**

**Configuration** The following example sets the type of max up-rate to 211.  
**on** Ruijie(config)# radius attribute 16 vendor-type 211  
**Examples**

Related Commands	Command	Description
	radius set qos cos	Sets the qos value sent by the RADIUS server as the cos value of the interface.

**Platform** N/A  
**Description**

## 2.6 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** Global configuration mode  
**Mode**

**Usage Guide** This command is used to identify the attributes of all vendor IDs by type.

**Configuration** The following example extends RADIUS so as not to differentiate the IDs of private vendors:  
**Examples** 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** N/A

**Description**

## 2.7 radius-server account update retransmit

Use this command to configure accounting update packet retransmission for the second-generation Web 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** N/A

**Description**

## 2.8 radius-server attribute 31

Use this command to specify the MAC-based format of RADIUS Calling-Station-ID attribute.

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
	<b>ietf</b>	The standard format specified by the IETF RFC3580. '-' is used as the separator, for example: 00-D0-F8-33-22-AC.
	<b>normal</b>	Normal format representing the MAC address. ':' is used as the separator. For example: 00d0.f833.22ac.
	<b>unformatted</b>	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** The following example defines the RADIUS Calling-Station-ID attribute as IETF format.

**Examples** Ruijie(config)# radius-server attribute 31 mac format ietf

Related Commands	Command	Description
	<b>radius-server host</b>	Defines the RADIUS server.

**Platform** N/A

**Description**

## 2.9 radius-server dead-criteria

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
	<b>time seconds</b>	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.
	<b>tries number</b>	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** The following example sets the timeout to 120 seconds and timeout times to 20.

**Examples** Ruijie(config)# radius-server dead-criteria time 120 tries 20

**Related Commands**

Command	Description
<b>radius-server host</b>	Defines the RADIUS security server.
<b>radius-server deadtime</b>	Defines the duration when a device stops sending any requests to an unreachable Radius server.
<b>radius-server timeout</b>	Defines the timeout for the packet re-transmission.

**Platform** N/A

**Description**

## 2.10 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 minutes**

**no radius-server deadtime**

**Parameter Description**

Parameter	Description
<i>minutes</i>	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 1,440 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** Global configuration mode

**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** The following example sets the duration when the device stops sending requests to 1 minute.

**Examples** Ruijie(config)# radius-server deadtime 1

**Related Commands**

Command	Description
<b>radius-server host</b>	Defines the RADIUS security server.
<b>radius-server dead-criteria</b>	Defines the criteria to determine that a Radius server is unreachable.

**Platform** N/A

**Description**

## 2.11 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** ] { *ipv4-address* | *ipv6-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* | *ipv6-address* }

**Parameter Description**

Parameter	Description
<b>oob</b>	Specifies an MGMT port as the source port for TACACS+ communication.
<i>ipv4-address</i>	IPv6 address of the RADIUS security server host.
<i>ipv6-address</i>	IPv4 address of the RADIUS security server host.
<i>auth-port</i>	UDP port used for RADIUS authentication.
<i>port-number</i>	Number of the UDP port used for RADIUS authentication. If it is set to 0, this host does not perform authentication.
<i>acct-port</i>	UDP port used for RADIUS accounting.
<i>port-number</i>	Number of the UDP port used for RADIUS accounting. If it is set to 0, this host does not perform accounting.
<b>test username</b> <i>name</i>	(Optional) Enables the active detection to the RADIUS security server and specify the username used by the active detection.
<b>idle-time</b> <i>time</i>	(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).
<b>ignore-auth-port</b>	(Optional) Disables the detection to the authentication port on the RADIUS security server. It is enabled by default.
<b>ignore-acct-port</b>	(Optional) Disables the detection to the authentication port on the RADIUS security server. It is enabled by default.
<b>key [ 0   7 ] <i>text-string</i></b>	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** The following example defines a RADIUS security server host:

**Examples**

```
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
```

The following example defines a RADIUS security server host in the IPv6 environment

```
Ruijie(config)# radius-server host 3000::100
```

**Related Commands**

Command	Description
<b>aaa authentication</b>	Defines the AAA authentication method list
<b>radius-server key</b>	Defines a shared password for the RADIUS security server.
<b>radius-server retransmit</b>	Defines the number of RADIUS packet retransmissions.

**Platform** N/A

**Description**

## 2.12 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
<i>text-string</i>	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** The following example defines the shared password **aaa** for the RADIUS security server:

**Examples** Ruijie(config)# radius-server key aaa

**Related  
Commands**

Command	Description
<b>radius-server host</b>	Defines the RADIUS security server.
<b>radius-server retransmit</b>	Defines the number of RADIUS packet retransmissions.
<b>radius-server timeout</b>	Defines the timeout for the RADIUS packet.

**Platform** N/A

**Description**

## 2.13 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
-----------	-------------

<i>retries</i>	Number of retransmissions in the range from 0 to 100. 0 means no retries.
----------------	---

**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** The following example sets the number of retransmissions to 4.

**Examples** Ruijie(config)# radius-server retransmit 4

<b>Related Commands</b>	Command	Description
	<b>radius-server host</b>	Defines the RADIUS security server.
	<b>radius-server key</b>	Defines a shared password for the RADIUS server.
	<b>radius-server timeout</b>	Defines the timeout for the RADIUS packet.

**Platform** N/A  
**Description**

## 2.14 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**

<b>Parameter Description</b>	Parameter	Description
	<i>port</i>	The port ID, 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** The following example configures source port 10000 to send RADIUS packets.

**Examples** Ruijie(config)# radius-server source-port 10000

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 2.15 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
<i>seconds</i>	Timeout 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** This command is used to change the timeout of packet retransmission.

**Configuration** The following example sets the timeout to 10 seconds.

**Examples** Ruijie(config)# radius-server timeout 10

**Related  
Commands**

Command	Description
<b>radius-server host</b>	Defines the RADIUS security server.
<b>radius-server retransmit</b>	Defines the number of the RADIUS packet retransmissions.
<b>radius-server key</b>	Defines a shared password for the RADIUS server.

**Platform** N/A

**Description**

## 2.16 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
	<b>radius vendor-specific extend</b>	Extends RADIUS as not to differentiate the IDs of private vendors.

**Platform Description** N/A

## 2.17 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** Global configuration mode  
**Mode**

**Usage Guide** This command is used to enable RADIUS to support the cui function.

**Configuration** The following example enables RADIUS to support the cui function.

**Examples** Ruijie(config)# radius support cui

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A  
**Description**

## 2.18 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* | *ipv6-addr* } [ **auth-port** *port1* ] [ **acct-port** *port2* ]

**no server** { *ipv4-addr* | *ipv6-addr* } [ **auth-port** *port1* ] [ **acct-port** *port2* ]

**Parameter  
Description**

Parameter	Description
<i>ip-addr</i>	Server IP address
<i>ipv6-addr</i>	Server IPv6 address
<i>port1</i>	Server authentication port
<i>port2</i>	Server accounting port

**Defaults** No server is configured by default.

**Command** Server group configuration mode  
**Mode**

**Usage Guide** N/A

**Configuration** 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.

**Examples**

```
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** N/A  
**Description**

## 2.19 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** The following example displays RADIUS accounting statistics.

**Examples**

```
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**

Command	Description
---------	-------------

Commands		
	N/A	N/A

**Platform** N/A

**Description**

## 2.20 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** The following example displays RADIUS authentication statistics.

**Examples**

```
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** N/A

**Description**

## 2.21 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** N/A

**Description**

## 2.22 show radius parameter

Use this command to display global RADIUS server parameters.

**show radius parameter**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	N/A	N/A
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Global configuration mode/Privileged EXEC mode/Interface configuration mode	
<b>Usage Guide</b>	N/A	
<b>Configuration Examples</b>	The following example displays global RADIUS server parameters. <pre>Ruijie# show radius parameter Server Timeout:  5 Seconds Server Deadtime: 0 Minutes Server Retries:  3 Server Dead Criteria: Time:           10 Seconds Tries:          10</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	N/A	N/A
<b>Platform Description</b>	N/A	

## 2.23 show radius server

Use this command to display the configuration of the RADIUS server.

**show radius server**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	N/A	N/A
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Privileged EXEC mode	
<b>Usage Guide</b>	N/A	
<b>Configuration</b>	The following example displays the configuration of the RADIUS server.	

**Examples**

```
Ruijie# show radius server
Server 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
<b>radius-server host</b>	Defines the RADIUS security server.
<b>radius-server retransmit</b>	Defines the number of RADIUS packet retransmissions.
<b>radius-server key</b>	Defines a shared password for the RADIUS server.
<b>radius-server timeout</b>	Defines the packet transmission timeout.

**Platform** N/A  
**Description**

## 2.24 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** The following example displays the configuration of the private vendors.

**Examples**

```
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-version 17
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
26     ipv6-multicast-addre 79
      ss
27     ipv4-multicast-addre 87
```

SS

**Related  
Commands**

Command	Description
<b>radius-server host</b>	Defines the RADIUS security server.
<b>radius-server retransmit</b>	Defines the number of RADIUS packet retransmissions.
<b>radius-server key</b>	Defines a shared password for the RADIUS server.
<b>radius-server timeout</b>	Defines the packet transmission timeout.

**Platform**

N/A

**Description**

## 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
	<i>group_name</i>	TACACS+ server group name, which cannot be <b>radius</b> or <b>tacacs+</b> . 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
	<b>server</b>	Configures server list of TACACS+ server group.
	<b>ip vrf forwarding</b>	Configures VRF name supported by TACACS+ server group.

**Platform Description** N/A

### 3.2 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**

**no ip oob**

<b>Parameter Description</b>	Parameter	Description
	N/A	N/A
<b>Defaults</b>	N/A	
<b>Command Mode</b>	TACACS+ server group configuration mode	
<b>Usage Guide</b>	Use the <b>aaa group server tacacs+</b> command to enter TACACS+ server group configuration mode.	
<b>Configuration Examples</b>	N/A	
<b>Platform Description</b>	N/A	

### 3.3 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-name*

**no ip tacacs source-interface** *interface-name*

<b>Parameter Description</b>	Parameter	Description
	<i>interface-name</i>	Interface for the outgoing TACACS+ packets
<b>Defaults</b>	The source IP address of TACACS+ packets is set on the network layer.	
<b>Command Mode</b>	Global configuration mode	
<b>Usage Guide</b>	<p>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.</p> <p>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.</p>	
<b>Configuration Examples</b>	<p>The following example specifies the IP address of GigabitEthernet 0/0 for the outgoing TACACS+ packets.</p> <pre>Ruijie(config)# ip tacacs source-interface gigabitEthernet 0/0</pre>	

Related Commands	Command	Description
	<b>tacacs-server host</b>	Defines a TACACS+ server.
	<b>ip address</b>	Configures the IP address of an interface.

Platform N/A

Description

### 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
	<i>vrf-name</i>	VRF name

Defaults N/A

Command TACACS+ server group configuration mode  
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** The following example specifies the VRF instance named vpn1 for the TACACS+ server group:

**Examples**

```
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
	<b>aaa group server tacacs+</b>	Configures the TACACS+ server group.
	<b>server</b>	Configures a server list of TACACS+ server group.

Platform N/A

Description



### 3.5 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* }

**no server** { *ipv4-address* }

Parameter Description	Parameter	Description
	<i>ipv4-address</i>	IPv4 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
	<b>aaa group server tacacs+</b>	Configures a TACACS+ server group.

**Platform Description** N/A

### 3.6 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** Privileged EXEC mode/Global configuration/Interface configuration mode

**Mode**

**Usage Guide** N/A

**Configuration** The following example displays the TACACS+ server configuration.

**Examples**

```
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
<b>tacacs-server host</b>	Defines a TACACS+ secure server host.

**Platform** N/A

**Description**

### 3.7 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** ] { *ipv4-address* } [ **port** *integer* ] [ **timeout** *integer* ] [ **key** [ **0** | **7** ] *text-string* ]

**no tacacs-server host** { *ipv4-address* }

**Parameter  
Description**

Parameter	Description
<i>ipv4-address</i>	IPv4 address of the TACACS+ host
<b>oob</b>	Specifies an MGMT port as the source port for TACACS+ communication.
<b>port</b> <i>integer</i>	Port number of the server. The range is from 1 to 65,535. The default is 49.
<b>timeout</b> <i>integer</i>	Timeout time of TACACS+ host. The range is from 1 to 1,000.
<b>key</b> <i>string</i>	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** Global configuration mode  
**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** The following example configures a TACACS+ host.

**Examples** Ruijie(config)# tacacs-server host 192.168.12.1

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

### 3.8 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
	<i>string</i>	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** Global configuration mode  
**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** The following example defines the authentication encryption key of TACACS+ server as aaa:

**Examples** Ruijie(config)# tacacs-server key aaa

Related Commands	Command	Description

<b>tacacs-server host</b>	Defines a TACACS+ host.
---------------------------	-------------------------

**Platform** N/A

**Description**

### 3.9 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
<i>seconds</i>	Timeout interval in the range from 1 to 1,000 in the unit of seconds

**Defaults** The default is 5 seconds.

**Command** Global configuration mode  
**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** The following example configures the timeout interval to 10 seconds.

**Examples** Ruijie(config)# tacacs-server timeout 10

**Related**  
**Commands**

Command	Description
<b>tacacs-server host</b>	Defines a TACACS+ secure server host.

**Platform** N/A

**Description**

## 4 SCC Commands

### 4.1 Identifier Description

Identifier	Description
vlanlist	Authentication-exemption VLAN list
interval	Authenticated-user online-status detection interval
threshold	The traffic threshold of authenticated-user online-status detection

### 4.2 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
<i>vlanlist</i>	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**

### 4.3 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
	<i>max-user-num</i>	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**

## 4.4 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** *threshold*

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
	<i>interval</i>	Indicates the interval of traffic detection (in minutes). The range is from 6 to 65,535 in minutes on a switch.
	<i>threshold</i>	Indicates the traffic threshold (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

## 4.5 show direct-vlan

Use this command to display the authentication-exemption VLAN configuration.

**show direct-vlan** [ **interface** *interface-name* ]

Parameter Description	Parameter	Description
	<i>interface-name</i>	Interface name
Command Mode	Privileged EXEC mode	
Level	14	
Usage Guide	N/A	
Configuration Examples	The following example displays the authentication-exemption VLAN configuration. <pre>Ruijie #show direct-vlan direct-vlan 5,7,100</pre>	
Prompt Messages	N/A	
Platforms	This command is supported only on switches.	

## 4.6 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
	<i>interface-name</i>	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	



**Examples**

0/1.

```
Ruijie#show nac-author-user interface gi 0/1
Port      Cur_num  Max_num
-----
Gi0/1     0        100
```

**Prompt**

N/A

**Messages****Platforms**

## 4.7 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**

The following examples enables authenticated-user migration.

**Examples**

```
Ruijie(config)#station-move permit
```

**Verification**

Use the **show running** command to check whether the authenticated-user migration function is enabled.

**Prompt**

N/A

**Messages****Common  
Errors**

N/A

**Platforms**

## 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
	<i>days</i>	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
	<i>length</i>	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** The following example sets the minimum length of the password to 8.

**Examples** 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
	<i>times</i>	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**

The following example bans the use of passwords used in the past five times.

**Examples**

```
Ruijie(config)# password policy no-repeat-times 5
```

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

## 5.4 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**

The following example configures the strong password check.

**Examples**

```
Ruijie(config)# password policy strong
```

Related Commands	Command	Description
	N/A	N/A

**Platform**  
**Description**

N/A

## 5.5 service password-encryption

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

**service password-encryption**

**no 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** The following example encrypts the password:

**Examples** Ruijie(config)# service password-encryption

Related Commands	Command	Description
	<b>enable password</b>	Sets passwords of different privileges.

**Platform**  
**Description**

N/A

## 5.6 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** The following example displays the password security policy set by the user.

<b>Examples</b>	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
	<i>interface-type</i> <i>interface-number</i>	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 fastEthernet 0/1
Interface          Broadcast Control Multicast Control Unicast Control
Action
-----
FastEthernet 0/1   1%          50%          1%      none
```

Related Commands	Command	Description
	<b>storm-control</b>	Enables storm suppression.

**Platform** N/A

**Description**

### 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
<b>level</b> <i>percent</i>	Sets the bandwidth percentage, for example, 20 means 20%.
<b>pps</b> <i>packets</i>	Sets the pps, which means packets per second.
<i>rate-bps</i>	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).

**Configuration Examples** The following example enables the multicast storm suppression on FastEthernet 0/1 and sets the allowed rate to 4M.

```
Ruijie(config)# int fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# storm-control multicast 4096
```

#### Related Commands

Command	Description
<b>show storm-control</b>	Displays storm suppression information.

**Platform Description** N/A

## 6.3 storm packet

Use this command to configure the average size of packets when packet storm control is enabled.

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

**storm packet** value

**no storm packet**

**default storm packet**

Parameter Description	Parameter	Description
	value	Indicates the packet size in the unit of byte.

**Defaults** The default value is 1,000.

**Command Mode** Interface configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example sets the average size of packets to 2,000 on the interface GigabitEthernet 0/1.

```
Ruijie(config)# int GigabitEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# storm packet 2000
```

Related Commands	Command	Description
	<b>show storm-control</b>	Displays storm suppression information.

**Platform Description** This command is only supported on CB cards.

## 7 SSH Commands

### 7.1 crypto key generate

Use this command to generate a public key to the SSH server.


**crypto key generate { rsa | dsa }**


Parameter	Parameter	Description
Description	<b>rsa</b>	Generates an RSA key.
	<b>dsa</b>	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.

 Only DSA/RSA authentication is available for one connection. Also, the key algorithm may differ in different client. Thus, it is recommended to generate both RSA and DSA keys so as to ensure connection with the portal server.

 RSA has a minimum modulus of 512 bits and a maximum modulus of 2,048 bits; DSA has a minimum modulus of 360 bits and a maximum modulus of 2,048 bits. For some clients like SCP clients, a 768-bit or more key is required. Thus, it is recommended to generate the key of 768 bits or more.

 A key can be deleted by using the **no crypto key generate** command. The **no crypto key zeroize** command is not available.

**Configuration** The following example generates an RSA key to the SSH server.

**Examples**

```
Ruijie# configure terminal
Ruijie(con fig)# crypto key generate rsa
```

Related Commands	Command	Description
	<b>show ip ssh</b>	Displays the current status of the SSH server.
	<b>crypto key zeroize { rsa   dsa }</b>	Deletes DSA and RSA keys and disables the SSH server function.

**Platform** N/A

**Description**

## 7.2 crypto key zeroize

Use this command to delete a public key to the SSH server.

**crypto key zeroize { rsa | dsa }**

Parameter	Parameter	Description
Description	rsa	Deletes the RSA key.
	dsa	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(config)# crypto key zeroize rsa
```

Related Commands	Command	Description
	show ip ssh	Displays the current status of the SSH server.
	crypto key generate { rsa   dsa }	Generates DSA and RSA keys.

**Platform** N/A

**Description**

## 7.3 disconnect ssh

Use this command to disconnect the established SSH connection.

**disconnect ssh [ vty ] session-id**

Parameter	Parameter	Description
Description	vtty	Established VTY connection
	session-id	ID of the established SSH connection, in the range from 0 to 35

**Defaults** N/A

**Command** Privileged EXEC mode  
**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
	<b>show ssh</b>	Displays the information about the established SSH connection.
	<b>clear line vty <i>line_number</i></b>	Disconnects the current VTY connection.

**Platform** N/A  
**Description**

## 7.4 disconnect ssh session

Use this command to disconnect the suspended SSH client session.

**disconnect ssh-session *session-id***

Parameter	Parameter	Description
<b>Description</b>	<i>session-id</i>	ID of the suspended SSH client session

**Defaults** N/A

**Command** User EXEC mode  
**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** N/A

**Description**

## 7.5 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	Parameter	Description
Description	N/A	N/A

**Defaults** This function is disabled by default.

**Command Mode** Global configuration mode

**Usage Guide** Secure Copy (SCP) enables an authenticated user to transfer files to/from a remote device in an encrypted way, with high security and guarantee.

**Configuration** The following example enables the SCP server function.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# ip scp server enable
```

Related Commands	Command	Description
	<b>show ip ssh</b>	Displays the current status of the SSH server.

**Platform** N/A

**Description**

## 7.6 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	Parameter	Description
Description	<i>access-list-number</i>	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.
	<i>access-list-name</i>	An ACL name.

<b>Defaults</b>	N/A
<b>Command Mode</b>	Global configuration mode
<b>Usage Guide</b>	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.
<b>Configuration Examples</b>	The following example performs the ACL filtering named testv4 for all connections to the SSH server.
<b>Platform</b>	N/A
<b>Description</b>	

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

## 7.7 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	Parameter	Description
<b>Description</b>	<i>retry times</i>	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 <b>show ip ssh</b> command to display the configuration of the SSH server					
Configuration Examples	The following example sets the authentication retry times to 2. <pre>Ruijie# configure terminal Ruijie(config)# ip ssh authentication-retries 2</pre>					
Related Commands	<table><thead><tr><th>Command</th><th>Description</th></tr></thead><tbody><tr><td><b>show ip ssh</b></td><td>Displays the current status of the SSH server.</td></tr></tbody></table>	Command	Description	<b>show ip ssh</b>	Displays the current status of the SSH server.	
Command	Description					
<b>show ip ssh</b>	Displays the current status of the SSH server.					
Platform Description	N/A					

```
Ruijie# configure terminal
Ruijie(config)# ip ssh authentication-retries 2
```

## 7.8 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* | *dsa* } *filename*

**no ip ssh peer** *username* **public-key** { *rsa* | *dsa* } *filename*

Parameter	Parameter	Description
Description	<i>username</i>	User name
	<i>filename</i>	Name of a public key file
	<b>rsa</b>	The public key is a RSA key
	<b>dsa</b>	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(config)# 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
	<b>show ip ssh</b>	Displays the current status of the SSH server.

**Platform Description** N/A

## 7.9 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	Parameter	Description
Description	<i>interface-name</i>	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** Global configuration mode  
**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** N/A  
**Description**

## 7.10 ip ssh time-out

Use this command to set the authentication timeout 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
<i>time</i>	Authentication timeout, in the range from 1 to 120 in the unit of seconds

**Defaults** The default is 120 seconds.

**Command** Global configuration mode  
**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 Commands**

Command	Description
<b>show ip ssh</b>	Displays the current status of the SSH server.

**Platform** N/A  
**Description**

## 7.11 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	Parameter	Description
Description	1	Supports the SSH1 client connection request.
	2	Supports the SSH2 client connection request.

**Defaults** SSH1 and SSH2 are compatible by default.

**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** The following example sets the version of the SSH server.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# ip ssh version 2
```

Related	Command	Description
Commands	<b>show ip ssh</b>	Displays the current status of the SSH server.

**Platform** N/A  
**Description**

## 7.12 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**

<b>Parameter Description</b>	Parameter	Description
	<i>access-list-name</i>	An IPv6 ACL name.
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Global configuration mode	
<b>Usage Guide</b>	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.	
<b>Configuration Examples</b>	The following example performs the IPv6 ACL filtering named testv6 for all connections to the SSH server. <pre>Ruijie# configure terminal Ruijie(config)# ipv6 ssh access-class testv6</pre>	
<b>Platform Description</b>	N/A	

## 7.13 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 }**

<b>Parameter Description</b>	Parameter	Description
	<b>rsa</b>	Displays the RSA key.
	<b>dsa</b>	Displays the DSA key.
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Privileged EXEC mode/Global configuration mode	
<b>Usage Guide</b>	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.	
<b>Configuration Examples</b>	The following example displays the information about the public key part of the public key to the SSH server. <pre>Ruijie(config)#show crypto key mypubkey rsa % Key pair was generated at: 7:1:25 UTC Jan 16 2013 Key name: RSA1 private Usage: SSH Purpose Key</pre>	

```

Key is not exportable.
Key Data:
      AAAAwEA AQAAEEEA 2m6H/J+2 xOMLW5MR 8tOmpWlI XU1QItVN mLdR+G7O
Q10kz+4/
      /IgYR0ge 1sZNg32u dFEIfZ6D zfLySPqC MTWLfw==

% Key pair was generated at: 7:1:25 UTC Jan 16 2013
Key name: RSA private
Usage: SSH Purpose Key
Key is not exportable.
Key Data:
      AAAAwEA AQAAEEEA 0E5w2H0k v744uTIR yZBd/7AM 8pLItnW3 XH3LhEEi
BbZGZvn3
      LEYYfQ9s pgYL0ZQf S0s/GY0X gJOMsc6z i8OAKQ==

```

Related	Command	Description
Commands	<b>crypto key generate { rsa   dsa }</b>	Generates DSA and RSA keys.

**Platform** N/A

**Description**

## 7.14 show ip ssh

Use this command to display the information of the SSH server.


**show ip 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 of the SSH server, including version, enablement state, authentication timeout, and authentication retry times.

 If no key is generated for the SSH server, the SSH version is still unavailable even if this SSH version has been configured.

**Configuration** The following example displays the information of the SSH server.

**Examples**

```

SSH and SCP disabled:
Ruijie(config)#show ip ssh
SSH Disable - version 1.99

```

```
please generate rsa and dsa key to enable SSH
Authentication timeout: 120 secs
Authentication retries: 3
SSH SCP Server: disabled

SSH and SCP enabled:
Ruijie(config)#show ip ssh
SSH Enable - version 1.99
Authentication timeout: 120 secs
Authentication retries: 3
SSH SCP Server: enabled
```

Related Commands	Command	Description
	<b>ip ssh version {1   2}</b>	Configures the version for the SSH server.
	<b>ip ssh time-out time</b>	Sets the authentication timeout for the SSH server.
	<b>ip ssh authentication-retries</b>	Sets the authentication retry times for the SSH server.

**Platform** N/A

**Description**

## 7.15 show ssh

Use this command to display 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
Connection Version Encryption      Hmac      Compress  State
Username
      0      1.5 blowfish                  zlib      Session started test
      1      2.0 aes256-cbc    hmac-sha1  zlib      Session started test
```

Field Description

Field	Description
Connection	VTY number
Version	SSH version
Encryption	Encryption algorithm
Hmac	Message authentication algorithm
Compress	Compress algorithm
State	Connection state
Username	Username

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 7.16 show ssh session

Use this command to display the SSH Client session.

**show ssh-session**

Parameter	Parameter	Description
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** The following example display the established SSH client session.

**Examples**

```
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** N/A  
**Description**

## 7.17 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 } ] [ -l username ] [ -m { hmac-md5-96 | hmac-md5-128 | hmac-sha1-96 | hmac-sha1-160 } ] [ -p port-num ] { ip-addr | hostname } [ /source { ip A.B.C.D | ipv6 X:X:X:X::X | interface interface-name } ] [ /vrf vrf-name ]
```

Parameter	Parameter	Description
<b>Description</b>	<b>oob</b>	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.
	<b>-v</b>	(Optional) The version of the SSH that is used to connect to the server. By default, it is SSHv2. <ul style="list-style-type: none"> <li>● Connect to the server via SSHv1.</li> <li>● Connect to the server via SSHv2.</li> </ul>
	<b>-c { 3des   aes128-cbc   aes192-cbc   aes256-cbc }</b>	(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.
	<b>-l username</b>	(Mandatory) The login username.
	<b>-m { hmac-md5-96   hmac-md5-128   hmac-sha1-96   hmac-sha1-160 }</b>	(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.
	<b>-p port-num</b>	(Optional) Specifies the port number that is used to connect to the SSH server. The port number is 22 by default.
	<b>ip-addr   hostname</b>	(Mandatory) Specifies the IPv4/IPv6 address or host name for the

	SSH server,
<b>/source</b>	Specifies the source IP address or the source interface for the SSH client.
<b>ip</b> A.B.C.D	Specifies the source IPv4 address for the SSH client.
<b>ipv6</b> X:X:X:X::X	Specifies the source IPv6 address for the SSH client.
<b>interface</b> <i>interface-name</i>	Specifies the source interface for the SSH client.
<b>/vrf</b> <i>vrf-name</i>	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: aes128-cbc, aes192-cbc and aes256-cbc.

 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

## 7.18 ssh session

Use this command to restore the suspended SSH client session.

**ssh-session** *session-id*

**Parameter Description**

Parameter	Description
<i>session-id</i>	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** The following example restores the suspended SSH client session:

**Examples** Ruijie# ssh-session 1

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 8 CPU Protection Commands

### 8.1 clear cpu-protect-counters

Use this command to clear the CPP statistics.

**clear cpu-protect counters** [ **device** *device\_num* ] [ **slot** *slot\_num* ]

**Parameter  
Description**

Parameter	Description
<i>device_num</i>	As a single physical device, there is no device parameter; As a VSU, the device parameter indicates the chassis or the box-type device. If no device parameter is specified, that indicates this command takes effect to the master chassis or the master box-type device.
<i>slot_num</i>	To the box-type device, there is no slot parameter. To the chassis device, the slot parameter indicates the line card of the master chassis. If no slot parameter is specified, that means the command will clear all node statistics in the system. If you want to clear the statistics of a specific node, both the device parameter and the slot parameter will be required.

**Defaults** N/A

**Command  
Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example clears the CPP statistics.

**Examples**

```
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** N/A

**Description**

## 8.2 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** The following example clears the CPP statistics on the supervisor module.

**Examples**

```
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 mboard
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** N/A

**Description**

## 8.3 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
	<i>bandwidth_value</i>	An integer number ranges from 0 to 100,000 (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 CPU port bandwidth to 32,000pps.

```
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

## 8.4 pu-protect traffic-class *traffic-class-num* 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
	<i>traffic-class-num</i>	A default integer that varies with products, indicating the queue priority

<i>bandwidth_value</i>	An integer number ranges from 0 to 100,000 (pps). Indicates the bandwidth value of the CPU port.
------------------------	--

**Defaults** The default bandwidth of each priority queue varies with products.

**Command Mode** Global configuration 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

## 8.5 cpu-proctect type packet-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
<i>packet-type</i>	Packet type, which varies with products
<i>bandwidth_value</i>	An integer number ranges from 0 to 32,000 (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** The following example sets the BPDU bandwidth to 200 pps.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# cpu-protect type bpdu bandwidth 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

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 8.6 cpu-protect type *packet-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
	<i>packet-type</i>	Packet type, which varies with products
	<i>traffic-class-num</i>	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** The following example sets the PQ of BPDU packets to 5.

**Examples**

```
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			

-----	-----	-----	-----	-----
-----	-----			
b pdu	5	200	0	0
			0	0

#### Related Commands

Command	Description
N/A	N/A

**Platform** N/A  
**Description**

## 8.7 show cpu-protect

Use this command to display all CPP configuration and statistics.

**show cpu-protect** [ **device** *device\_num* ] [ **slot** *slot\_num* ]

#### Parameter Description

Parameter	Description
<i>device_num</i>	As a single physical device, there is no device parameter; As a VSU, the device parameter indicates the chassis or the box-type device. If no device parameter is specified, that indicates this command takes effect to the master chassis or the master box-type device.
<i>slot_num</i>	To the box-type device, there is no slot parameter. To the chassis device, the slot parameter indicates the line card of the master chassis. If no slot parameter is specified, that means the command will clear all node statistics in the system. If you want to clear the statistics of a specific node, both the device parameter and the slot parameter will be required.

**Defaults** N/A

**Command Mode** All configuration 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: 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	Total
Drop							
bpdu	6	128	0	0	0	0	0
arp	3	10000	0	0	0	0	0
arp-dai	3	10000	0	0	0	0	0
arp-proxy	3	10000	0	0	0	0	0
tpp	7	128	0	0	0	0	0
dot1x	4	128	0	0	0	0	0
gvrp	5	128	0	0	0	0	0
rldp	6	128	0	0	0	0	0
lacp	6	128	0	0	0	0	0
rerp	6	128	0	0	0	0	0
reup	6	128	0	0	0	0	0
lldp	5	128	0	0	0	0	0
cdp	5	128	0	0	0	0	0
dhcps	4	128	0	0	0	0	0
dhcps6	4	128	0	0	0	0	0
dhcp6-client	4	128	0	0	0	0	0
dhcp6-server	4	128	0	0	0	0	0
dhcp-relay-c	4	128	0	0	0	0	0
dhcp-relay-s	4	128	0	0	0	0	0
option82	4	128	0	0	0	0	0
tunnel-bpdu	5	128	0	0	0	0	0
tunnel-gvrp	5	128	0	0	0	0	0
unknown-v6mc	3	128	0	0	0	0	0
known-v6mc	3	128	0	0	0	0	0
xgv6-ipmc	3	128	0	0	0	0	0
stargv6-ipmc	3	128	0	0	0	0	0
unknown-v4mc	3	128	0	0	0	0	0
known-v4mc	3	128	0	0	0	0	0
xgv-ipmc	3	128	0	0	0	0	0
sgv-ipmc	3	128	0	0	0	0	0
udp-helper	4	128	0	0	0	0	0
dvmrp	5	128	0	0	0	0	0
igmp	4	128	0	0	0	0	0
icmp	4	128	0	0	0	0	0
ospf	5	128	0	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

## 8.8 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** The following example displays the configuration of the CPU port.

**Examples**

```
Ruijie#show cpu-protect cpu
%cpu port bandwidth: 32000 (pps)
```

Related Commands	Command	Description
	N/A	N/A

**Platform  
Description** N/A

## 8.9 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** The following example displays the CPP configuration and statistics of the master device.

**Examples**

```
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 N/A

Description

8.10 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

Ruijie#show cpu-protect summary						
%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

## 8.11 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*] [**slot** *slot\_num*]

#### Parameter Description

Parameter	Description
<i>traffic-class-num</i>	A default integer that varies with products, indicating the queue priority.
<i>all</i>	Displays configurations and statistics of all priority queues.

<i>device_num</i>	As a single physical device, there is no device parameter; As a VSU, the device parameter indicates the chassis or the box-type device. If no device parameter is specified, that indicates this command takes effect to the master chassis or the master box-type device.
<i>slot_num</i>	To the box-type device, there is no slot parameter. To the chassis device, the slot parameter indicates the line card of the master chassis. If no slot parameter is specified, that means the command will clear all node statistics in the system. If you want to clear the statistics of a specific node, both the device parameter and the slot parameter will be required.

**Defaults** N/A

**Command Mode** All configuration modes

**Usage Guide** N/A

**Configuration** The following example displays the summarized configuration and statistics of priority queues.

**Examples**

```
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

## 8.12 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* ] [ **slot** *slot\_num* ]

**Parameter**

Parameter	Description
-----------	-------------



<b>Description</b>		
	<i>packet-type</i>	Packet type, which varies with products
	<i>all</i>	Displays the configurations and statistics of all packet types.
	<i>device_num</i>	As a single physical device, there is no device parameter; As a VSU, the device parameter indicates the chassis or the box-type device. If no device parameter is specified, that indicates this command takes effect to the master chassis or the master box-type device.
	<i>slot_num</i>	To the box-type device, there is no slot parameter. To the chassis device, the slot parameter indicates the line card of the master chassis. If no slot parameter is specified, that means the command will clear all node statistics in the system. If you want to clear the statistics of a specific node, both the device parameter and the slot parameter will be required.

**Defaults** N/A

**Command Mode** All configuration modes

**Usage Guide** N/A

**Configuration** The following example displays the statistics of the ICMP packets.

**Examples**

```
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
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	N/A	N/A

**Platform Description** N/A

## 8.13 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
	<i>packet-type</i>	Packet type, which varies with products
	<i>Interface id</i>	Interface ID.

**Defaults** N/A

**Command** All configuration modes

**Mode**

**Usage Guide** N/A

**Configuration** 1. The following example displays the statistics of all packets on a specified interface.

**Examples**

```
Ruijie#show cpu-protect statistics interface tenGigabitEthernet 0/33
Te0/33
```

Packet Type	Rate (pps)	Drop (pps)	Total	Total Drop	Total HW_Drop
bpdu	0	0	0	0	0
arp	0	0	248053	0	0
tp	0	0	0	0	0
dot1x	0	0	0	0	0
gvrp	0	0	0	0	0
rldp	0	0	0	0	0
lacp	0	0	0	0	0
rerp	0	0	0	0	0
reup	0	0	0	0	0
lldp	0	0	560	0	0
cdp	0	0	0	0	0
dhcps	0	0	0	0	0
dhcps6	0	0	0	0	0
dhcp6-client	0	0	0	0	0
dhcp6-server	0	0	0	0	0
dhcp-relay-c	0	0	0	0	0
dhcp-relay-s	0	0	0	0	0

option82	0	0	0	0	0
tunnel-bpdu	0	0	0	0	0
tunnel-gvrp	0	0	0	0	0
unknown-v6mc	0	0	0	0	0
xgv6-ipmc	0	0	0	0	0
stargv6-ipmc	0	0	0	0	0
unknown-v4mc	0	0	0	0	0
xgv-ipmc	0	0	0	0	0
stargv-ipmc	0	0	0	0	0
udp-helper	0	0	0	0	0
dvmrp	0	0	0	0	0
igmp	0	0	0	0	0
icmp	0	0	0	0	0
ospf	0	0	0	0	0
ospf3	0	0	0	0	0
pim	0	0	0	0	0
pimv6	0	0	0	0	0
rip	0	0	0	0	0
ripng	0	0	0	0	0
vrrp	0	0	0	0	0
vrrpv6	0	0	0	0	0
ttl0	0	0	0	0	0
ttl1	0	0	0	0	0
hop-limit	0	0	0	0	0
local-ipv4	0	0	0	0	0
local-ipv6	0	0	0	0	0
v4uc-route	0	0	0	0	0
v6uc-route	0	0	0	0	0
rt-host	0	0	0	0	0
mld	0	0	0	0	0
nd-snp-ns-na	0	0	0	0	0
nd-snp-rs	0	0	0	0	0
nd-snp-ra-redirect	0	0	0	0	0
erps	0	0	0	0	0
mpls-ttl0	0	0	0	0	0
mpls-ttl1	0	0	0	0	0
mpls-ctrl	0	0	0	0	0
isis	0	0	0	0	0
bgp	0	0	0	0	0
cfm	0	0	0	0	0
web-auth	0	0	0	0	0
fcoe-fip	0	0	0	0	0
fcoe-local	0	0	0	0	0
bfd	0	0	0	0	0

micro-bfd	0	0	0	0	0
micro-bfd-v6	0	0	0	0	0
dldp	0	0	0	0	0
other	0	0	0	0	0
trill	0	0	0	0	0
efm	0	0	0	0	0
ipv6-all	0	0	0	0	0
ip-option	0	0	0	0	0
mgmt	0	0	0	0	0
dns	0	0	0	0	0
sdn	0	0	0	0	0
sdn_of_fetch	0	0	0	0	0
sdn_of_copy	0	0	0	0	0
sdn_of_trap	0	0	0	0	0
vxlan-non-uc	0	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

## 9 NFPP Commands

### 9.1 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
	<b>per-src-ip</b>	Sets the attack threshold for each source IP address.
	<b>per-src-mac</b>	Sets the attack threshold for each source MAC address.
	<b>per-port</b>	Sets the attack threshold for each port.
	<i>pps</i>	Sets the attack threshold, in the range from 1 to 19,999 in unit of pps.

**Defaults** The default value varies with products. For details, see the *Configuration Guide*.

**Command** NFPP configuration mode.

**Mode**

**Usage Guide** The attack threshold shall be equal to or greater than the rate-limit threshold.

**Configuration** The following example sets the global attack threshold.

**Examples**

```
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
	<b>nfpp arp-guard policy</b>	Displays the rate-limit threshold and attack threshold.
	<b>show nfpp arp-guard summary</b>	Displays the configuration.
	<b>show nfpp arp-guard hosts</b>	Displays the monitored host.
	<b>clear nfpp arp-guard hosts</b>	Clears the isolated host.

**Platform** N/A

**Description**

## 9.2 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
	<b>nfpp arp-guard enable</b>	Enables the anti-ARP attack on the interface.
	<b>show nfpp arp-guard summary</b>	Displays the configuration.

**Platform Description** N/A

## 9.3 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
	<i>seconds</i>	Sets the isolate time. The value is 0, or in the range from 30 to 86400 in the unit of seconds.

<b>permanent</b>	Permanent isolation.
------------------	----------------------

**Defaults** The default isolate time is 0, which means no isolation.

**Command Mode** NFPP configuration mode.

**Usage Guide** N/A

**Configuration** The following example sets the arp-guard isolate time globally to 180 seconds.

**Examples**

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard isolate-period 180
```

Related Commands	Command	Description
	<b>nfpp arp-guard isolate-period</b>	Sets the isolate time on the interface.
	<b>show nfpp arp-guard summary</b>	Displays the configuration.

**Platform** N/A

**Description**

## 9.4 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** The following example enables packet forwarding through NFPP isolation.

**Examples**

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard isolate-forwarding enable
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 9.5 arp-guard monitored-host-limit

Use this command to set the maximum 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
	<i>number</i>	The maximum monitored host number, in the range from 1 to 4,294,967,295.

**Defaults** The default is 20000.

**Command Mode** NFPP configuration mode

**Usage Guide** If the monitored host number has reached the default 20,000, the administrator shall set the max-number smaller than 20,000 and it will prompt the message that %ERROR: The value that you configured is smaller than current monitored hosts 20,000, 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 maximum monitored host number to 200.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard monitored-host-limit 200
```

Related Commands	Command	Description
	<b>show nfpp arp-guard summary</b>	Displays the configuration.

**Platform** N/A  
**Description**



## 9.6 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
	<i>seconds</i>	Sets the monitor time, in the range from 180 to 86,400 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
	<b>show nfpp arp-guard summary</b>	Displays the configuration.
	<b>show nfpp arp-guard hosts</b>	Displays the monitored host list.
	<b>clear nfpp arp-guard hosts</b>	Clears the isolated host.

**Platform** N/A

**Description**

## 9.7 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
<b>per-src-ip</b>	Sets the rate limit for each source IP address.
<b>per-src-mac</b>	Sets the rate limit for each source MAC address.
<b>per-port</b>	Sets the rate limit for each port.
<i>pps</i>	Sets the rate limit, in the range of 1 to 19,999.

**Defaults** The default value varies with products. For details, see the *Configuration Guide*.

**Command  
Mode** NFPP configuration mode

**Usage Guide** N/A

**Configuration** The following example sets the arp guard rate limit.

**Examples**

```
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
<b>nfpp arp-guard policy</b>	Sets the rate limit and the attack threshold.
<b>show nfpp arp-guard summary</b>	Displays the configuration.

**Platform  
Description** N/A

## 9.8 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** The following example sets the port based arp guard rate limit.

**Examples**

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard ratelimit-forwarding enable
```

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 9.9 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
<i>pkt-cnt</i>	Sets the scan threshold, in the range from 1 to 19,999 in the unit of seconds.

**Defaults** The default value varies with products. For details, see the *Configuration Guide*.

**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** The following example sets the global scan threshold to 20pps.

**Examples**

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard scan-threshold 20
```

Related Commands	Command	Description
	<b>nfpp arp-guard scan-threshold</b>	Sets the scan threshold on the port.
	<b>show nfpp arp-guard summary</b>	Displays the configuration.
	<b>show nfpp arp-guard scan</b>	Displays the ARP guard scan table.
	<b>clear nfpp arp-guard scan</b>	Clears the ARP guard scan table.

**Platform** N/A

**Description**

## 9.10 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
	<i>vid</i>	Sets the VLAN ID.
	<i>interface-id</i>	Sets the interface name and number.
	<i>ip-address</i>	Sets the IP address.
	<i>mac-address</i>	Sets the MAC address.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example clears the monitored host isolation.

**Examples**

```
Ruijie# clear nfpp arp-guard hosts vlan 1 interface g0/1
```

Related Commands	Command	Description
	<b>arp-guard attack-threshold</b>	Sets the global attack threshold.
	<b>nfpp arp-guard policy</b>	Sets the limit threshold and attack threshold.
	<b>show nfpp arp-guard hosts</b>	Displays the monitored host.

**Platform** N/A

**Description**

## 9.11 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** The following example clears ARP scanning table.

**Examples** 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** N/A

**Description**

## 9.12 clear nfpp define *name* hosts

Use this command to clear the monitored hosts. If the host is isolated, you need to release it.

**clear nfpp define *name* hosts** [ **vlan** *vid* ] [ **interface** *interface-id* ] [ *ip-address* ] [ *mac-address* ]  
[ *ipv6-address* ]

Parameter Description	Parameter	Description
	<i>name</i>	Defines guard name
	<i>vid</i>	VLAN ID
	<i>interface-id</i>	Interface name
	<i>ip-address</i>	IP address
	<i>mac-address</i>	MAC address

<i>ipv6-address</i>	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** The following example clears the monitored hosts.

**Examples** 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

## 9.13 clear nfpp dhcp-guard hosts

Use this command to clear the DHCP monitored hosts, that is, release them from isolation.

**clear nfpp dhcp-guard hosts** [ **vlan** *vid* ] [ **interface** *interface-id* ] [ *mac-address* ]

Parameter Description	Parameter	Description
	<i>vid</i>	Sets the VLAN ID.
	<i>interface-id</i>	Sets the interface name and number.
	<i>mac-address</i>	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** The following example clears the DHCP monitored hosts.

**Examples** Ruijie# clear nfpp dhcp-guard hosts vlan 1 interface g0/1

Related Commands	Command	Description
	dhcp-guard attack-threshold	Sets the global attack threshold.

<b>nfpp dhcp-guard policy</b>	Sets the limit threshold and attack threshold.
<b>show nfpp dhcp-guard hosts</b>	Displays the monitored host.

**Platform** N/A

**Description**

## 9.14 clear nfpp dhcpv6-guard hosts

Use this command to clear the DHCPv6 monitored host isolation.

**clear nfpp dhcpv6-guard hosts** [ **vlan** *vid* ] [ **interface** *interface-id* ] [ *mac-address* ]

Parameter Description	Parameter	Description
	<i>vid</i>	Sets the VLAN ID.
	<i>interface-id</i>	Sets the interface name and number.
	<i>mac-address</i>	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** The following example clears the DHCPv6 monitored hosts.

**Examples** Ruijie# clear nfpp dhcpv6-guard hosts vlan 1 interface g0/1

Related Commands	Command	Description
	<b>dhcpv6-guard attack-threshold</b>	Sets the global attack threshold.
	<b>nfpp dhcpv6-guard policy</b>	Sets the limit threshold and attack threshold.
	<b>show nfpp dhcpv6-guard hosts</b>	Displays the monitored host.

**Platform** N/A

**Description**

## 9.15 clear nfpp icmp-guard hosts

Use this command to clear the ICMP monitored hosts.

**clear nfpp icmp-guard hosts** [ **vlan** *vid* ] [ **interface** *interface-id* ] [ *ip-address* ]

Parameter Description	Parameter	Description

<i>vid</i>	Sets the VLAN ID.
<i>interface-id</i>	Sets the interface name and number.
<i>ip-address</i>	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** The following example clears the ICMP monitored hosts.

**Examples** 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** N/A

**Description**

## 9.16 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
	<i>vid</i>	Sets the VLAN ID.
	<i>interface-id</i>	Sets the interface name and number.
	<i>ip-address</i>	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** The following example clears the monitored host isolation.

**Examples** Ruijie# clear nfpp ip-guard hosts vlan 1 interface g0/1



Related Commands	Command	Description
	<b>ip-guard attack-threshold</b>	Sets the global attack threshold.
	<b>nfpp ip-guard policy</b>	Sets the limit threshold and attack threshold.
	<b>show nfpp ip-guard hosts</b>	Displays the monitored host.

Platform N/A

Description

## 9.17 clear nfpp nd-guard hosts

Use this command to remove the speed limit on the monitored host.

**clear nfpp nd-guard hosts** [**vlan** *vid*] [**interface** *interface-id*]

Parameter Description	Parameter	Description
	<i>vid</i>	Sets the VLAN ID.
	<i>interface-id</i>	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 N/A

Messages

Platform N/A

Description

## 9.18 clear nfpp log

Use this command to clear the NFPP log buffer area.

**clear nfpp log**

Parameter	Parameter	Description
-----------	-----------	-------------

<b>Description</b>		
	N/A	N/A
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Privileged EXEC mode	
<b>Usage Guide</b>	N/A	
<b>Configuration</b>	The following example clears the NFPP log buffer area.	
<b>Examples</b>	Ruijie# clear nfpp log	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	show nfpp log	Displays the NFPP log configuration or the log buffer area.
<b>Platform</b>	N/A	
<b>Description</b>		

## 9.19 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\_value*

**no cpu-protect sub-interface { manage | protocol | route } percent**

**default cpu-protect sub-interface { manage | protocol | route } percent**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<i>percent_value</i>	The percent value, in the range from 1 to 100.
<b>Defaults</b>	The default percent values of each type of packets occupied in the buffer area are: Manage packets: 30; Route packets: 25; Protocol packets: 45.	
<b>Command Mode</b>	Global configuration mode	
<b>Usage Guide</b>	N/A	
<b>Configuration</b>	The following example sets the percent value of management packets in the buffer area to 60.	

**Examples**

```
Ruijie(config)# cpu-protect sub-interface manage percent 60
```

**Related  
Commands**

Command	Description
<b>cpu-protect sub-interface { manage   protocol   route } pps</b>	Configures the traffic bandwidth of each type of packets.

**Platform**

N/A

**Description**

## 9.20 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\_value*

**no cpu-protect sub-interface { manage | protocol | route } pps**

**default cpu-protect sub-interface { manage | protocol | route } pps**

**Parameter  
Description**

Parameter	Description
<i>pps_value</i>	The rate limit threshold, in the range from 1 to 100,000

**Defaults**

The default value varies with products. For details, see the *Configuration Guide*.

**Command  
Mode**

Global configuration mode

**Usage Guide**

N/A

**Configuration**

The following example sets the traffic bandwidth of management packets to 2,000 pps.

**Examples**

```
Ruijie(config)# cpu-protect sub-interface manage pps 2000
```

**Related  
Commands**

Command	Description
<b>cpu-protect sub-interface { manage   protocol   route } percent</b>	Configures the percent value of each type of packets occupied in the buffer area.

**Platform**

N/A

**Description**

## 9.21 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
	<i>name</i>	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)# nfpp
Ruijie(config-nfpp)# define tcp
Ruijie(config-nfpp-define)#
```

Related Commands	Command	Description
	<b>show nfpp define summary</b>	Displays the defined anti-attack configuration.

**Platform Description** N/A

## 9.22 define *name* 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
	<i>name</i>	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	The following example enabled the user-defined anti-attack globally.	
Examples	<pre>Ruijie(config)# nfpp Ruijie(config-nfpp)#define tcp enable</pre>	
Related Commands	Command	Description
	show nfpp define summary	Displays the user-defined anti-attack configuration
Platform Description	N/A	

## 9.23 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 }**

<b>Parameter Description</b>	Parameter	Description
	<b>per-src-mac</b>	Sets the attack threshold for each source MAC address.
	<b>per-port</b>	Sets the attack threshold for each port.
	<i>pps</i>	Sets the attack threshold, in pps. The valid range is 1 to 19,999.

<b>Defaults</b>	The default value varies with products. For details, see the <i>Configuration Guide</i> .	
<b>Command Mode</b>	NFPP configuration mode	
<b>Usage Guide</b>	N/A	

**Configuration** The following example sets the global attack threshold.

**Examples**

```
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
<b>nfpp dhcp-guard policy</b>	Displays the rate-limit threshold and attack threshold.
<b>show nfpp dhcp-guard summary</b>	Displays the configuration.
<b>show nfpp dhcp-guard hosts</b>	Displays the monitored host list.
<b>clear nfpp dhcp-guard hosts</b>	Clears the monitored host.

**Platform** N/A**Description**

## 9.24 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** The following example enables the DHCP anti-attack function.**Examples**

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard enable
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A**Description**

## 9.25 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
	<i>seconds</i>	Sets the isolate time. The value is 0 or in the range from 30 to 86,400 in the unit of seconds.
	<b>permanent</b>	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
	<b>nfpp dhcp-guard isolate-period</b>	Sets the isolate time on the interface.
	<b>show nfpp dhcp-guard summary</b>	Displays the configuration.

**Platform** N/A

**Description**

## 9.26 dhcp-guard monitored-host-limit

Use this command to set the maximum 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**

<b>Parameter Description</b>	Parameter	Description
	<i>number</i>	The maximum monitored host number, in the range from 1 to 4,294,967,295.
<b>Defaults</b>	The default is 20,000.	
<b>Command Mode</b>	NFPP configuration mode	
<b>Usage Guide</b>	<p>If the monitored host number has reached the default 20,000, the administrator shall set the max-number smaller than 20,000 and it will prompt the message that %ERROR: The value that you configured is smaller than current monitored hosts 20,000, please clear a part of monitored hosts to remind the administrator of the invalid configuration and removing the monitored hosts.</p> <p>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.</p>	
<b>Configuration Examples</b>	<p>The following example sets the maximum monitored host number to 200.</p> <pre>Ruijie(config)# nfpp Ruijie(config-nfpp)# dhcp-guard monitored-host-limit 200</pre>	
<b>Related Commands</b>	Command	Description
	<b>show nfpp dhcp-guard summary</b>	Displays the configuration.
<b>Platform</b>	N/A	
<b>Description</b>		

## 9.27 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**

<b>Parameter Description</b>	Parameter	Description
	<i>seconds</i>	Sets the monitor time, in the range from 180 to 86,400 in the unit of seconds.
<b>Defaults</b>	The default is 600 seconds.	



**Command** NFPP configuration mode  
**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 monitor time to 180 seconds.

**Examples**

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard monitor-period 180
```

**Related  
Commands**

Command	Description
<b>show nfpp dhcp-guard summary</b>	Displays the configuration.
<b>show nfpp dhcp-guard hosts</b>	Displays the monitored host list.
<b>clear nfpp dhcp-guard hosts</b>	Clears the isolated host.

**Platform** N/A  
**Description**

## 9.28 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
<b>per-src-mac</b>	Sets the rate limit for each source MAC address.
<b>per-port</b>	Sets the rate limit for each port.
<i>pps</i>	Sets the rate limit, in the range of 1 to 19,999.

**Defaults** The default value varies with products. For details, see the *Configuration Guide*.

**Command** NFPP configuration mode  
**Mode**

**Usage Guide** N/A

**Configuration** The following example sets the rate-limit threshold globally.

**Examples**

```
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
<b>nfpp dhcp-guard policy</b>	Sets the rate limit and the attack threshold.
<b>show nfpp dhcp-guard summary</b>	Displays the configuration.

**Platform** N/A

**Description**

## 9.29 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
<b>per-src-mac</b>	Sets the attack threshold for each source MAC address.
<b>per-port</b>	Sets the attack threshold for each port.
<i>pps</i>	Sets the attack threshold, in the range is from 1 to 19,999 pps.

**Defaults** The default value varies with products. For details, see the *Configuration Guide*.

**Command  
Mode** NFPP configuration mode

**Usage Guide** N/A.

**Configuration** The following example sets the global attack threshold.

**Examples**

```
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
---------	-------------

<b>nfpp dhcpv6-guard policy</b>	Displays the rate-limit threshold and attack threshold.
<b>show nfpp dhcpv6-guard summary</b>	Displays the configuration.
<b>show nfpp dhcpv6-guard hosts</b>	Displays the monitored host list.
<b>clear nfpp dhcpv6-guard hosts</b>	Clears the monitored host.

**Platform** N/A

**Description**

## 9.30 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** N/A

**Description**

## 9.31 dhcpv6-guard monitored-host-limit

Use this command to set the maximum 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
	<i>number</i>	The maximum monitored host number, in the range from 1 to 4,294,967,295.

**Defaults** The default is 20,000.

**Command Mode** NFPP configuration mode

**Usage Guide** If the monitored host number has reached the default 20,000, the administrator shall set the max-number smaller than 20,000 and it will prompt the message that %ERROR: The value that you configured is smaller than current monitored hosts 20,000, 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 maximum monitored host number to 200.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcpv6-guard monitored-host-limit 200
```

Related Commands	Command	Description
	<b>show nfpp dhcpv6-guard summary</b>	Displays the configuration.

**Platform Description** N/A

## 9.32 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
	<i>seconds</i>	Sets the monitor time, in the range from 180 to 86,400 in the unit of

	seconds.
--	----------

**Defaults** The default is 600 seconds.

**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** The following example sets the monitor time to 180 seconds.

**Examples**

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcpv6-guard monitor-period 180
```

Related Commands	Command	Description
	<b>show nfpp dhcpv6-guard summary</b>	Displays the configuration.
	<b>show nfpp dhcpv6-guard hosts</b>	Displays the monitored host list.
	<b>clear nfpp dhcpv6-guard hosts</b>	Clears the isolated host.

**Platform** N/A

**Description**

## 9.33 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
	<b>per-src-mac</b>	Sets the rate limit for each source MAC address.
	<b>per-port</b>	Sets the rate limit for each port.
	<i>pps</i>	Sets the rate limit, in the range from 1 to 19,999.

**Defaults** The default value varies with products. For details, see the *Configuration Guide*.

**Command** NFPP configuration mode  
**Mode**

**Usage Guide** N/A

**Configuration** The following example sets the rate-limit threshold globally.

**Examples**

```
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
<b>nfpp dhcpv6-guard policy</b>	Sets the rate limit and the attack threshold.
<b>show nfpp dhcpv6-guard summary</b>	Displays the configuration.

**Platform** N/A  
**Description**

## 9.34 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
<b>per-src-ip</b>	Performs the rate statistics based on the source IP / VID and port.
<b>per-src-mac</b>	Performs the rate statistics based on the source MAC / VID and port.
<b>per-port</b>	Performs the rate statistics based on each physical port of receiving the packets.
<i>rate-limit-pps</i>	Sets the rate-limit threshold.
<i>attack-threshold-pps</i>	Sets the attack threshold.

**Defaults** By default, no rate-limit threshold and attack threshold is configured. To enable self-defined anti-attack, these two parameters must be set.

**Command** NFPP define configuration mode  
**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** The following example sets the rate-limit threshold and attack threshold based on the host or port.

**Examples**

```
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
<b>nfpp define</b> <i>name</i> <b>policy</b>	Sets the rate-limit threshold and attack threshold.
<b>show nfpp define summary</b>	Displays the user-defined anti-attack configuration

**Platform** N/A

**Description**

## 9.35 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
<b>per-src-ip</b>	Sets the attack threshold for each source IP address.
<b>per-port</b>	Sets the attack threshold for each port.
<i>pps</i>	Sets the attack threshold, in the range from 1 to 19,999 in the unit of pps.

**Defaults** The default value varies with products. For details, see the *Configuration Guide*.

**Command Mode** NFPP configuration mode

**Usage Guide** N/A

**Configuration** The following example sets the global attack threshold.

**Examples**

```
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
<b>nfpp icmp-guard policy</b>	Displays the rate-limit threshold and attack threshold.
<b>show nfpp icmp-guard summary</b>	Displays the configuration.
<b>show nfpp icmp-guard hosts</b>	Displays the monitored host list.
<b>clear nfpp icmp-guard hosts</b>	Clears the monitored host.

**Platform** N/A

**Description**

## 9.36 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** The following example enables the ICMP anti-attack function globally.

**Examples**

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard enable
```

**Related  
Commands**

Command	Description
---------	-------------



<b>nfpp icmp-guard enable</b>	Enables the ICMP anti-attack function on the interface.
<b>show nfpp icmp-guard summary</b>	Displays the configuration.

**Platform** N/A

**Description**

## 9.37 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
<i>seconds</i>	Sets the isolate time. The value is in the range is 0 or from 30 to 86,400 in the unit of seconds.
<b>permanent</b>	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** The following example sets the isolate time globally to 180 seconds.

**Examples**

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard isolate-period 180
```

**Related  
Commands**

Command	Description
<b>nfpp icmp-guard isolate-period</b>	Sets the isolate time on the interface.
<b>show nfpp icmp-guard summary</b>	Displays the configuration.

**Platform** N/A

**Description**

## 9.38 icmp-guard monitored-host-limit

Use this command to set the maximum 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
	<i>number</i>	The maximum monitored host number, in the range from 1 to 4,294,967,295.

**Defaults** The default is 20,000.

**Command Mode** NFPP configuration mode

**Usage Guide** If the monitored host number has reached the default 20,000, the administrator shall set the max-number smaller than 20,000 and it will prompt the message that %ERROR: The value that you configured is smaller than current monitored hosts 20,000, 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 20,000 monitored hosts to remind the administrator.

**Configuration** The following example sets the maximum monitored host number to 200.

**Examples**

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard monitored-host-limit 200
```

Related Commands	Command	Description
	<b>show nfpp icmp-guard summary</b>	Displays the configuration.

**Platform** N/A

**Description**

## 9.39 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
	<i>seconds</i>	Sets the monitor time, in the range from 180 to 86,400 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
	<b>show nfpp icmp-guard summary</b>	Displays the configuration.
	<b>show nfpp icmp-guard hosts</b>	Displays the monitored host list.
	<b>clear nfpp icmp-guard hosts</b>	Clears the isolated host.

**Platform** N/A

**Description**

## 9.40 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
	<b>per-src-ip</b>	Sets the rate limit for each source IP address.
	<b>per-port</b>	Sets the rate limit for each port.

<i>pps</i>	Sets the rate limit, in the range from 1 to 19,999.
------------	---

**Defaults** The default value varies with products. For details, see the *Configuration Guide*.

**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
<b>nfpp icmp-guard policy</b>	Sets the rate limit and the attack threshold.
<b>show nfpp icmp-guard summary</b>	Displays the configuration.

**Platform Description** N/A

## 9.41 icmp-guard trusted-host

Use this command to set the trusted hosts free from 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
<i>ip</i>	Sets the IP address.
<i>mask</i>	Sets the IP mask.
<b>all</b>	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** The following example sets the trusted hosts free form monitoring.

**Examples**

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard trusted-host 1.1.1.0 255.255.255.0
```

**Related  
Commands**

Command	Description
<b>show nfpp icmp-guard trusted-host</b>	Displays the configuration.

**Platform** N/A

**Description**

## 9.42 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
<b>per-src-ip</b>	Sets the attack threshold for each source IP address.
<b>per-port</b>	Sets the attack threshold for each port.
<i>pps</i>	Sets the attack threshold, in pps. The valid range is 1 to 19,999.

**Defaults**

The default value varies with products. For details, see the *Configuration Guide*.

**Command  
Mode** NFPP configuration mode

**Usage Guide** The attack threshold shall be equal to or larger than the rate-limit threshold.

**Configuration** The following example sets the global attack threshold.

**Examples**

```
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**

Command	Description
---------	-------------

Commands		
	<b>nfpp ip-guard policy</b>	Displays the rate-limit threshold and attack threshold.
	<b>show nfpp ip-guard summary</b>	Displays the configuration.
	<b>show nfpp ip-guard hosts</b>	Displays the monitored host list.
	<b>clear nfpp ip-guard hosts</b>	Clears the monitored host.

Platform N/A

Description

## 9.43 ip-guard enable

Use this command to enable IP guard.

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** This configuration aims at attacks whose destination IP address is not the local one. For those with the local address as the destination, CPP (CPU Protect Policy) will limit their rates.

**Configuration Examples** The following example enables the IP guard globally.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard enable
```

Related Commands	Command	Description
	<b>nfpp ip-guard enable</b>	Enables the IP guard on the interface.

Platform N/A

Description

## 9.44 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
	<i>seconds</i>	Sets the isolate time. The value is 0 or in the range from 30 to 86,400 in the unit of seconds.
	<b>permanent</b>	Permanent isolation

**Defaults** The default isolate time is 0 second, 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
	<b>nfpp ip-guard isolate-period</b>	Sets the isolate time on the interface.
	<b>show nfpp ip-guard summary</b>	Displays the configuration.

**Platform Description** N/A

## 9.45 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

<i>seconds</i>	Sets the monitor time, in the range from 180 to 86,400 in the unit of seconds.
----------------	--

**Defaults** The default is 600 seconds.

**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** The following example sets the monitor time to 180 seconds.

**Examples**

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard monitor-period 180
```

Related Commands	Command	Description
	<b>show nfpp ip-guard summary</b>	Displays the configuration.
	<b>show nfpp ip-guard hosts</b>	Displays the monitored host list.
	<b>clear nfpp ip-guard hosts</b>	Clears the isolated host.

**Platform** N/A  
**Description**

## 9.46 ip-guard monitored-host-limit

Use this command to set the maximum 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
	<i>number</i>	The maximum monitored host number, in the range from 1 to 4,294,967,295.

**Defaults** The default is 20,000 seconds.

**Command** NFPP configuration mode



**Mode**

**Usage Guide** If the monitored host number has reached the default 20,000, the administrator shall set the max-number smaller than 20,000 and it will prompt the message that %ERROR: The value that you configured is smaller than current monitored hosts 20,000, 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 20,000 monitored hosts to remind the administrator.

**Configuration** The following example sets the maximum monitored host number to 200.

**Examples**

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard monitored-host-limit 200
```

**Related Commands**

Command	Description
<b>show nfpp ip-guard summary</b>	Displays the configuration.

**Platform** N/A

**Description**

## 9.47 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
<b>per-src-ip</b>	Sets the rate limit for each source IP address.
<b>per-port</b>	Sets the rate limit for each port.
<i>pps</i>	Sets the rate limit, in the range of 1 to 19,999.

**Defaults** The default value varies with products. For details, see the *Configuration Guide*.

**Command** NFPP configuration mode

**Mode**

**Usage Guide** N/A

**Configuration** The following example sets the rate-limit threshold globally.

**Examples**

```
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
<b>nfpp ip-guard policy</b>	Sets the rate limit and the attack threshold.
<b>show nfpp ip-guard summary</b>	Displays the configuration.

**Platform**

N/A

**Description**

## 9.48 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
<i>pkt-cnt</i>	Sets the scan threshold, in the range from 1 to 19,999.

**Defaults**

The default value varies with products. For details, see the *Configuration Guide*.

**Command  
Mode**

NFPP configuration mode.

**Usage Guide**

N/A

**Configuration** The following example sets the global scan threshold to 20 pps.

**Examples**

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard scan-threshold 20
```

**Related  
Commands**

Command	Description
<b>nfpp ip-guard scan-threshold</b>	Sets the scan threshold on the port.
<b>show nfpp ip-guard summary</b>	Displays the configuration.

**Platform**

N/A

**Description**

## 9.49 ip-guard trusted-host

Use this command to set the trusted hosts free from 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
<i>ip</i>	Sets the IP address.
<i>mask</i>	Sets the IP mask.
<b>all</b>	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** The following example sets the trusted hosts free form monitoring.

### Examples

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard trusted-host 1.1.1.0 255.255.255.0
```

### Related Commands

Command	Description
<b>show nfpp ip-guard trusted-host</b>	Displays the configuration.

**Platform Description** N/A

## 9.50 log-buffer enable

Use this command to display logs 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**

<b>Parameter Description</b>	Parameter	Description
	N/A	N/A
<b>Defaults</b>	Logs are stored in the cache by default.	
<b>Command Mode</b>	NFPP configuration mode	
<b>Usage Guide</b>	N/A	
<b>Configuration Examples</b>	The following example displays logs on the screen. <pre>Ruijie(config)# nfpp Ruijie(config-nfpp)# log-buffer enable</pre>	
<b>Related Commands</b>	Command	Description
	N/A	N/A
<b>Platform Description</b>	N/A	

## 9.51 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**

<b>Parameter Description</b>	Parameter	Description
	<i>number</i>	The buffer area size, in the range from 0 to 1,024.
<b>Defaults</b>	The default is 256.	
<b>Command Mode</b>	NFPP configuration mode	
<b>Usage Guide</b>	N/A	
<b>Configuration Examples</b>	The following example sets the NFPP log buffer area size. <pre>Ruijie(config)# nfpp Ruijie(config-nfpp)# log-buffer entries 50</pre>	

Related Commands	Command	Description
	<b>log-buffer logs</b> <i>number_of_message</i> <b>interval</b> <i>length_in_seconds</i>	Displays the rate of the syslog generated from the NFPP buffer area.
	<b>show nfpp log</b>	Displays the NFPP log configuration or the log buffer area.

Platform N/A

Description

## 9.52 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
	<i>number_of_message</i>	The valid range is from 0 to 1024. 0 indicates that all logs are recorded in the specific buffer area and no syslogs are generated.
	<i>length_in_seconds</i>	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 <i>number_of_message</i> and <i>length_in_seconds</i> values are 0, it indicates not to write the log to the buffer area but generate the syslog immediately. The parameter <i>number_of_message /length_in_second</i> 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
	<b>log-buffer entries</b> <i>number</i>	Sets the NFPP log buffer area size.
	<b>show nfpp log summary</b>	Displays the NFPP log configuration or the log buffer area.

**Platform** N/A

**Description**

## 9.53 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
	<i>vlan-range</i>	Sets the specified VLAN range, in the format such as "1-3, 5".
	<i>interface-id</i>	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
	<b>show nfpp log summary</b>	Displays the NFPP log configuration or the log buffer area.

**Platform** N/A

**Description**

## 9.54 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** *sip6* [ **src-ipv6-masklen** *sip6-masklen* ] ] [ **dst-ip** *dip* [ **dst-ip-mask** *dip-mask* ] ] [ **dst-ipv6** *dip6* [ **dst-ipv6-masklen** *dip6-masklen* ] ] [ **src-port** *sport* ] [ **dst-port** *dport* ]

**Parameter Description**

Parameter	Description
<i>type</i>	Ethernet link layer packet type
<i>smac</i>	Source MAC address
<i>smac_mask</i>	Source MAC address mask
<i>dmac</i>	Destination MAC address
<i>dmac_mask</i>	Destination MAC address mask
<i>protocol</i>	IPv4/v6 message protocol
<i>sip</i>	Source IPv4 address
<i>sip_mask</i>	Source IPv4 address mask
<i>sip6</i>	Source IPv6 address
<i>sip6_masklen</i>	Source IPv6 address mask
<i>dip</i>	Destination IPv4 address
<i>dip_mask</i>	Destination IPv4 address mask
<i>dip6</i>	Destination IPv6 address
<i>dip6_masklen</i>	Length of the destination IPv6 address mask.
<i>sport</i>	Source port
<i>dport</i>	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 fields 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)# define tcp
Ruijie(config-nfpp-define)#match etype 0x0800 protocol 0x06
```

Related Commands	Command	Description
	<b>show nfpp define summary</b>	Displays the user-defined anti-attack configuration

**Platform** N/A  
**Description**

## 9.55 monitored-host-limit

Use this command to set the maximum 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
	<i>number</i>	The maximum monitored host number, in the range from 1 to 4,294,967,295.

**Defaults** The default is 2,000.

**Command Mode** NFPP define configuration mode

**Usage Guide** If the monitored host number has reached the default 20,000, the administrator shall set the max-number smaller than 20,000 and it will prompt the message that %ERROR: The value that you configured is smaller than current monitored hosts 20,000, 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 20,000 monitored hosts. to remind the administrator

**Configuration Examples** The following example sets the maximum monitored host number.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# nfpp define tcp
Ruijie(config-nfpp-define)#monitored-host-limit 500
```

Related Commands	Command	Description
	<b>show nfpp define summary</b>	Displays the user-defined anti-attack configuration



**Platform** N/A  
**Description**

## 9.56 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
	<i>seconds</i>	Sets the monitor time, in the range from 180 to 86,400 in the unit of seconds.

**Defaults** The default is 600 seconds.

**Command** NFPP define configuration mode  
**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 1,000 seconds.

**Examples**

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# define tcp
Ruijie(config-nfpp-define)#monitor-period 1000
```

Related Commands	Command	Description
	<b>show nfpp define summary</b>	Displays the user-defined anti-attack configuration.

**Platform** N/A  
**Description**

## 9.57 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
<b>ns-na</b>	Sets the neighbor request and neighbor advertisement.
<b>rs</b>	Sets the router request.
<b>ra-redirect</b>	Sets the router advertisement and the redirect packets.
<i>pps</i>	Sets the attack threshold, in the range from 1 to 19999 in the unit of seconds.

**Defaults** The default value varies with products. For details, see the *Configuration Guide*.

**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 Commands

Command	Description
<b>nfpp ip-guard policy</b>	Displays the rate-limit threshold and attack threshold.
<b>show nfpp ip-guard summary</b>	Displays the configuration.

**Platform Description** N/A

## 9.58 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
	<b>nfpp nd-guard enable</b>	Enables the ND anti-attack function on the interface.
	<b>show nfpp nd-guard summary</b>	Displays the configuration.

**Platform Description** N/A

## 9.59 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
	<b>ns-na</b>	Sets the neighbor request and neighbor advertisement.
	<b>rs</b>	Sets the router request.
	<b>ra-redirect</b>	Sets the router advertisement and the redirect packets.
	<i>pps</i>	Sets the attack threshold, in the range is from 1 to 19,999 in the unit of pps.

**Defaults** The default value varies with products. For details, see the *Configuration Guide*.

**Command Mode** NFPP configuration mode

**Usage Guide** N/A

**Configuration** The following example sets the rate-limit threshold globally.

**Examples**

```
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
<b>nfpp nd-guard policy</b>	Sets the rate limit and the attack threshold.
<b>show nfpp nd-guard summary</b>	Displays the configuration.

**Platform** N/A

**Description**

## 9.60 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** The following example enables the ND-guard ratelimit-forwarding on the interface.

**Examples**

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# nd-guard ratelimit-forwarding enable
```

**Platform** N/A

**Description**

## 9.61 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** The following example enters NFPP configuration mode.

**Examples**

```
Ruijie(config)# nfpp
```

**Platform** N/A

**Description**

## 9.62 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** Interface configuration mode

**Mode**

**Usage Guide** The interface anti-ARP attack configuration is prior to the global configuration.

**Configuration** The following example enables the anti-ARP attack function on the interface.

**Examples**

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp arp-guard enable
```

**Related  
Commands**

Command	Description
<b>arp-guard enable</b>	Enables the anti-ARP attack function.
<b>show nfpp arp-guard summary</b>	Displays the configuration.

**Platform** N/A

**Description**

## 9.63 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
<i>seconds</i>	Sets the isolate period. The value is 0, or in the range from 30 to 86,400 in the unit of seconds.
<b>permanent</b>	Permanent isolation

**Defaults** By default, the isolate period is not configured.

**Command** Interface configuration mode

**Mode**

**Usage Guide** N/A

**Configuration** The following example sets the isolate period in the interface configuration mode.

**Examples**

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp arp-guard isolate-period 180
```

**Related  
Commands**

Command	Description
---------	-------------

<b>arp-guard isolate-period</b>	Sets the global isolate period.
<b>show nfpp arp-guard summary</b>	Displays the configuration.

**Platform** N/A

**Description**

## 9.64 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
<b>per-src-ip</b>	Sets the rate-limit threshold and the attack threshold for each source IP address.
<b>per-src-mac</b>	Sets the rate-limit threshold and the attack threshold for each source MAC address.
<b>per-port</b>	Sets the rate-limit threshold and the attack threshold for each port.
<i>rate-limit-pps</i>	Sets the rate-limit threshold, in the range from 1 to 19999.
<i>attack-threshold-pps</i>	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** The following example sets the rate-limit threshold and the attack threshold.

**Examples**

```
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
<b>arp-guard attack-threshold</b>	Sets the global attack threshold.
<b>arp-guard rate-limit</b>	Sets the global rate-limit threshold.
<b>show nfpp arp-guard summary</b>	Displays the configuration.
<b>show nfpp arp-guard hosts</b>	Displays the monitored host.

<b>clear nfpp arp-guard hosts</b>	Clears the isolated host.
-----------------------------------	---------------------------

**Platform** N/A

**Description**

## 9.65 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
	<i>pkt-cnt</i>	Sets the scan threshold, in the range from 1 to 19,999.

**Defaults** By default, the sport-based scan threshold is not configured.

**Command Mode** Interface configuration mode

**Usage Guide** N/A

**Configuration** The following example sets the scan threshold to 20 pps.

**Examples**

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp arp-guard scan-threshold 20
```

Related Commands	Command	Description
	<b>arp-guard attack-threshold</b>	Sets the global attack threshold.
	<b>show nfpp arp-guard summary</b>	Displays the configuration.
	<b>show nfpp arp-guard scan</b>	Displays the ARP scan table.
	<b>clear nfpp arp-guard scan</b>	Clears the ARP scan table.

**Platform** N/A

**Description**

## 9.66 nfpp define *name* 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
<i>name</i>	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** The following example enables the user-defined anti-attack function on the interface.

**Examples**

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp define tcp enable
```

**Related  
Commands**

Command	Description
<b>show nfpp define summary</b>	Displays the user-defined anti-attack configuration.

**Platform  
Description** N/A

## 9.67 nfpp define name 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
<b>per-src-ip</b>	Sets the attack threshold for each source IP address.
<b>per-src-mac</b>	Sets the attack threshold for each source MAC address.
<b>per-port</b>	Sets the attack threshold for each port.
<i>rate-limit-pps</i>	Sets the rate-limit threshold, in the range from 1 to 19,999.
<i>attack-threshold-pps</i>	Sets the attack threshold, in the range of from 1 to 19,999.

- Defaults** By default, the rate-limit threshold and the attack threshold are not configured.
- Command** Interface configuration mode
- Mode**
- Usage Guide** The attack threshold value shall be equal to or greater than the rate-limit threshold.
- Configuration** The following example sets the local rate-limit threshold and the attack threshold.
- Examples**
- ```
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                                                |
|---------------------------------|------------------------------------------------------------|
| <b>define-policy</b>            | Sets the global rate-limit threshold and attack threshold. |
| <b>show nfpp define summary</b> | Displays the user-defined anti-attack configuration.       |

- Platform** N/A
- Description**

## 9.68 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** Interface configuration mode
- Mode**
- Usage Guide** The interface DHCP anti- attack configuration is prior to the global configuratio
- Configuration** The following example enables the DHCP anti-attack function on the interface.
- Examples**
- ```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp dhcp-guard enable
```

Related Commands	Command	Description
	<b>dhcp-guard enable</b>	Enables the anti-ARP attack function.
	<b>show nfpp dhcp-guard summary</b>	Displays the configuration.

**Platform** N/A

**Description**

## 9.69 nfpp dhcp-guard isolate-period

Use this command to set the DOT1X-guard isolation time on an interface. 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
	<i>seconds</i>	Sets the isolation time. The value is 0 or ranges from 30 to 86400 in the unit of seconds. Value 0 indicates no isolation.
	<b>permanent</b>	Permanent isolation.

**Defaults** The global isolation time instead of the local one is configured by default.

**Command Mode** Interface configuration mode

**Default Level** 14

**Usage Guide** N/A

**Configuration** The following example sets the DHCP-guard isolation time on interface G0/1 to 180s.

**Examples**

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp dhcp-guard isolate-period 180
```

**Verification** Run the **show nfpp dhcp-guard summary** command to display the configuration information.

## 9.70 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
<b>per-src-mac</b>	Sets the rate-limit threshold and the attack threshold for the designated source MAC address.
<b>per-port</b>	Sets the rate-limit threshold and the attack threshold for the designated port.
<i>rate-limit-pps</i>	Sets the rate-limit threshold, in the range from 1 to 19,999.
<i>attack-threshold-pps</i>	Sets the attack threshold, in the range from 1 to 19,999.

**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

## 9.71 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** The following example enables the DHCPv6 anti-attack function on interface G0/1.

**Examples**

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp dhcpv6-guard enable
```

**Related Commands**

Command	Description
<b>dhcpv6-guard enable</b>	Enables the anti-ARP attack function.
<b>show nfpp dhcpv6-guard summary</b>	Displays the configuration.

**Platform** N/A

**Description**

## 9.72 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
<b>per-src-mac</b>	Sets the rate-limit threshold and the attack threshold for each source MAC address.
<b>per-port</b>	Sets the rate-limit threshold and the attack threshold for each port.
<i>rate-limit-pps</i>	Sets the rate-limit threshold, in the range of from1 to 19,999.
<i>attack-threshold-pps</i>	Sets the attack threshold, in the range from1 to19,999.

**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** The following example sets the rate-limit threshold and the attack threshold.

**Examples**

```
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
<b>dhcpv6-guard attack-threshold</b>	Sets the global attack threshold.
<b>dhcpv6-guard rate-limit</b>	Sets the global rate-limit threshold.
<b>show nfpp dhcpv6-guard summary</b>	Displays the configuration.
<b>show nfpp dhcpv6-guard hosts</b>	Displays the monitored host.
<b>clear nfpp dhcpv6-guard hosts</b>	Clears the isolated host.

**Platform** N/A

**Description**

## 9.73 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** Interface configuration mode  
**Mode**

**Usage Guide** The interface ICMP anti- attack configuration is prior to the global configuration.

**Configuration** The following example enables the ICMP anti-attack function on the interface.

**Examples**

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp icmp-guard enable
```

**Related  
Commands**

Command	Description
<b>icmp-guard enable</b>	Enables the anti-ARP attack function.
<b>show nfpp icmp-guard summary</b>	Displays the configuration.

**Platform** N/A  
**Description**

## 9.74 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
<i>seconds</i>	Sets the isolate period. The value is 0 or in the range from 30 to 86,400 in the unit of seconds.
<b>permanent</b>	Permanent isolation

**Defaults** By default, the isolate period is not configured.

**Command** Interface configuration mode  
**Mode**

**Usage Guide** N/A

**Configuration** The following example sets the isolate period in the interface configuration mode.

**Examples**

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp icmp-guard isolate-period 180
```

**Related**  
**Commands**

Command	Description
<b>icmp-guard isolate-period</b>	Sets the global isolate period.
<b>show nfpp icmp-guard summary</b>	Displays the configuration.

**Platform** N/A  
**Description**

## 9.75 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** { *per-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
	<b>per-src-ip</b>	Sets the rate-limit threshold and the attack threshold for each source IP address.
	<b>per-port</b>	Sets the rate-limit threshold and the attack threshold for each port.
	<i>rate-limit-pps</i>	Sets the rate-limit threshold, in the range from 1 to 19,999.
	<i>attack-threshold-pps</i>	Sets the attack threshold, in range from 1 to 19,999.

**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
	<b>icmp-guard attack-threshold</b>	Sets the global attack threshold.
	<b>icmp-guard rate-limit</b>	Sets the global rate-limit threshold.
	<b>show nfpp icmp-guard summary</b>	Displays the configuration.
	<b>show nfpp icmp-guard hosts</b>	Displays the monitored host.
	<b>clear nfpp icmp-guard hosts</b>	Clears the isolated host.

**Platform** N/A  
**Description**

## 9.76 nfpp ip-guard enable

Use this command to enable the IP 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-attack function is disabled on the interface.

**Command Mode** Interface configuration mode

**Usage Guide** The interface IP anti-attack configuration is prior to the global configuration.

**Configuration** The following example enables the IP anti-attack function on the interface.

**Examples**

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp ip-guard enable
```

**Related Commands**

Command	Description
<b>ip-guard enable</b>	Enables the anti-ARP attack function.
<b>show nfpp ip-guard summary</b>	Displays the configuration.

**Platform** N/A

**Description**

## 9.77 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
<i>seconds</i>	Sets the isolate period, in the range from 30 to 86,400 in the unit of seconds.
<b>permanent</b>	Permanent isolation

**Defaults** By default, the isolate period is not configured.

**Command Mode** Interface configuration mode

**Usage Guide** N/A

**Configuration** The following example sets the isolate period in the interface configuration mode.

**Examples**

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp ip-guard isolate-period 180
```

Related Commands	Command	Description
	<b>ip-guard isolate-period</b>	Sets the global isolate period.
	<b>show nfpp ip-guard summary</b>	Displays the configuration.

**Platform** N/A

**Description**

## 9.78 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
	<b>per-src-ip</b>	Sets the rate-limit threshold and the attack threshold for each source IP address.
	<b>per-port</b>	Sets the rate-limit threshold and the attack threshold for each port.
	<i>rate-limit-pps</i>	Sets the rate-limit threshold, in the range from 1 to 19,999.
	<i>attack-threshold-pps</i>	Sets the attack threshold, in the range from 1 to 19,999.

**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** The following example sets the rate-limit threshold and the attack threshold.

**Examples**

```
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
	<b>ip-guard attack-threshold</b>	Sets the global attack threshold.
	<b>ip-guard rate-limit</b>	Sets the global rate-limit threshold.
	<b>show nfpp ip-guard summary</b>	Displays the configuration.
	<b>show nfpp ip-guard hosts</b>	Displays the monitored host.

<b>clear nfpp ip-guard hosts</b>	Clears the isolated host.
----------------------------------	---------------------------

**Platform** N/A

**Description**

## 9.79 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
<i>pkt-cnt</i>	Sets the scan threshold, in the range from 1 to 19,999.

**Defaults** By default, the sport-based scan threshold is not configured.

**Command  
Mode** Interface configuration mode

**Usage Guide** N/A

**Configuration** The following example sets the scan threshold to 20pps.

**Examples**

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp ip-guard scan-threshold 20
```

**Related  
Commands**

Command	Description
<b>ip-guard attack-threshold</b>	Sets the global attack threshold.
<b>show nfpp ip-guard summary</b>	Displays the configuration.

**Platform** N/A

**Description**

## 9.80 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 disabled on the interface.

**Command Mode** Interface configuration mode

**Usage Guide** The interface ND anti-attack configuration is prior to the global configuration.

**Configuration** The following example enables the ND anti-attack function on the interface.

**Examples**

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp nd-guard enable
```

Related Commands	Command	Description
	<b>nd-guard enable</b>	Enables the ND anti-attack function.
	<b>show nfpp nd-guard summary</b>	Displays the configuration.

**Platform** N/A

**Description**

## 9.81 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
	<b>ns-na</b>	Sets the neighbor request and neighbor advertisement.
	<b>rs</b>	Sets the router request.
	<b>ra-redirect</b>	Sets the router advertisement and the redirect packets.
	<i>rate-limit-pps</i>	Sets the rate-limit threshold, in the range from 1 to 19,999.
	<i>attack-threshold-pps</i>	Sets the attack threshold, in the range from 1 to 19,999.

**Defaults** By default, the rate-limit threshold and the attack threshold are not configured.

**Command** Interface configuration mode

**Mode**

**Usage Guide** The attack threshold value shall be equal to or greater than the rate-limit threshold.

**Configuration** The following example sets the rate-limit threshold and the attack threshold.

**Examples**

```
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
<b>nd-guard attack-threshold</b>	Sets the global attack threshold.
<b>nd-guard rate-limit</b>	Sets the global rate-limit threshold.
<b>show nfpp nd-guard summary</b>	Displays the configuration.

**Platform** N/A

**Description**

## 9.82 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
<b>statistics</b>	Displays the statistical information of the monitored host.
<i>vid</i>	The VLAN ID
<i>interface-id</i>	The interface name
<i>ip-address</i>	The IP address
<i>mac-address</i>	The MAC address

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the statistical information of the monitored host.

**Examples**

```
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
<b>clear nfpp arp-guard hosts</b>	Clears the monitored hosts.

**Platform** N/A

**Description**

## 9.83 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
<b>statistics</b>	Displays the statistical information of the ARP scan list.
<i>vid</i>	The VLAN ID
<i>interface-id</i>	The interface name
<i>mac-address</i>	The MAC address

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the ARP scan list.

**Examples**

```
Ruijie# show nfpp arp-guard scan statistics
arp-guard table has 4 record(s).
```

The following example displays the ARP scan list.

```
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)
```

The following example displays the ARP scan list.

```
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
<b>arp-guard scan-threshold</b>	Sets the global scan threshold.
<b>nfpp arp-guard scan-threshold</b>	Sets the scan threshold.
<b>clear nfpp arp-guard scan</b>	Clears the ARP scan list.

**Platform** N/A

**Description**

## 9.84 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** The following example displays the configuration.

**Examples**

```
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
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.
Scan-threshold	Scan threshold

#### Related Commands

Command	Description
<b>arp-guard attack-threshold</b>	Sets the global attack threshold.
<b>arp-guard enable</b>	Enables the anti-ARP attack function.
<b>arp-guard isolate-period</b>	Sets the global isolate time.
<b>arp-guard monitor-period</b>	Sets the monitor period.
<b>arp-guard monitored-host-limit</b>	Sets the maximum number of the monitored hosts.
<b>arp-guard rate-limit</b>	Sets the global rate-limit threshold.
<b>arp-guard scan-threshold</b>	Sets the global scan threshold.
<b>nfpp arp-guard enable</b>	Enables the anti-ARP attack function on the interface.
<b>nfpp arp-guard isolate-period</b>	Sets the isolate time.
<b>nfpp arp-guard policy</b>	Sets the rate-limit threshold and attack threshold.
<b>nfpp arp-guard scan-threshold</b>	Sets the scan threshold.

**Platform** N/A

**Description**

## 9.85 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]
[mac-address] [ipv6-address]]

```



Parameter Description	Parameter	Description
	<i>name</i>	Name of the user-defined anti-attack type
	<b>statistics</b>	Displays the statistics of monitored hosts.
	<i>vid</i>	VLAN ID
	<i>interface-id</i>	Interface name
	<i>ip-address</i>	IP address
	<i>mac-address</i>	MAC address
	<i>ipv6-address</i>	IPv6 address

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** This command allows filtering the hosts with parameters specified

**Configuration** The following example displays the monitored hosts.

**Examples**

```
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 Commands	Command	Description
	<b>clear nfpp define hosts</b>	Clears the monitored hosts of user-defined anti-attack type.

**Platform** N/A

**Description**

## 9.86 show nfpp define summary

Use this command to display the configuration.

**show nfpp define summary** [ *name* ]

Parameter Description	Parameter	Description
	<i>name</i>	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** The following example displays the configuration.

**Examples**

```
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.
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.

**Related Commands**

Command	Description
<b>match</b>	Clears the monitored hosts of user-defined anti-attack type.
<b>policy</b>	Attack threshold and rate-limit threshold.
<b>isolate-period</b>	Isolates time
<b>monitored-period</b>	Monitored time
<b>monitored-host-limit</b>	Maximum monitored host number

**Platform** N/A

**Description**

## 9.87 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
	<i>name</i>	Name of the user-defined anti-attack type

**Defaults** N/A.

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the trusted host configuration.

**Examples**

```
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
	<b>trusted-host</b>	Configures the trusted hosts.

**Platform** N/A

**Description**

## 9.88 show nfpp dhcp-guard hosts

Use this command to display the monitored host.

**show nfpp dhcp-guard hosts** [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*] [*mac-address*]]]

Parameter Description	Parameter	Description
	<b>statistics</b>	Displays the statistical information of the monitored host.
	<i>vid</i>	VLAN ID
	<i>interface-id</i>	Interface name

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the monitored host.

**Examples**

```
Ruijie# show nfpp dhcp-guard hosts statistics
success      fail      total
-----
100          20        120
```

The following example displays 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
<b>clear nfpp dhcp-guard hosts</b>	Clears the monitored host.

**Platform** N/A

**Description**

## 9.89 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** The following example displays the configuration.

**Examples**

```
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
Interface(Global)	Global configuration
Status	Enables/Disables the anti-attack function.
Isolate-period	Isolate period
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.

#### Related Commands

Command	Description
<b>dhcp-guard attack-threshold</b>	Sets the global attack threshold.
<b>dhcp-guard enable</b>	Enables the DHCP anti-attack function.
<b>dhcp-guard isolate-period</b>	Sets the global isolate time.
<b>dhcp-guard monitor-period</b>	Sets the monitor period.
<b>dhcp-guard monitored-host-limit</b>	Sets the maximum number of the monitored hosts.
<b>dhcp-guard rate-limit</b>	Sets the global rate-limit threshold.
<b>nfpp dhcp-guard enable</b>	Enables the DHCP anti-attack function on the interface.
<b>nfpp dhcp-guard isolate-period</b>	Sets the isolate time.
<b>nfpp dhcp-guard policy</b>	Sets the rate-limit threshold and attack threshold.

Platform N/A

#### Description

## 9.90 show nfpp dhcpv6-guard hosts

Use this command to display the monitored host.

**show nfpp dhcpv6-guard hosts** [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*] [*mac-address*]]]

#### Parameter Description

Parameter	Description
<b>statistics</b>	Displays the statistical information of the monitored host.

<i>vid</i>	The VLAN ID
<i>interface-id</i>	The interface name
<i>mac-address</i>	The MAC address

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the monitored host.

**Examples**

```
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 Commands**

Command	Description
<b>clear nfpp dhcpv6-guard hosts</b>	Clears the monitored host.

**Platform** N/A

**Description**

## 9.91 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** The following example displays the configuration.

**Examples**

```
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.

**Related Commands**

Command	Description
<b>dhcpv6-guard attack-threshold</b>	Sets the global attack threshold.
<b>dhcpv6-guard enable</b>	Enables the DHCPv6 anti-attack function.
<b>dhcpv6-guard monitor-period</b>	Sets the monitor period.
<b>dhcpv6-guard monitored-host-limit</b>	Sets the maximum number of the monitored hosts.
<b>dhcpv6-guard rate-limit</b>	Sets the global rate-limit threshold.
<b>nfpp dhcpv6-guard enable</b>	Enables the DHCPv6 anti-attack function on the interface.
<b>nfpp dhcpv6-guard policy</b>	Sets the rate-limit threshold and attack threshold.

**Platform** N/A

**Description**

## 9.92 show nfpp fw-guard hosts

Use this command to display the FW-guard monitored host.

**show nfpp fw-guard hosts** [**statistics** | **[[vlan vid] [ip-address]]**]

**Parameter Description**

Parameter	Description
<b>statistics</b>	Displays the statistical information of the monitored host.
<i>vid</i>	The VLAN ID

<i>ip-address</i>	The IP address
-------------------	----------------

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays statistics of FW-guard monitored hosts.

**Examples**

```
Ruijie# show nfpp fw-guard hosts statistics
success    fail    total
-----    -
100        20      120
```

The following example displays the FW-guard monitored host.

```
Ruijie# show nfpp fw-guard hosts
If col_filter 1 shows '*', it means "hardware do not isolate host".
VLAN    interface    IP address    remain-time(s)
----    -
*301    -              10.32.0.3     585
Total: 1 host
```

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

## 9.93 show nfpp fw-guard summary

Use this command to display the FW-guard configuration.

**show nfpp fw-guard summary**

**Parameter Description**

Parameter	Description
N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode



**Usage Guide** N/A

**Configuration** The following example displays the FW-guard configuration.

**Examples**

```
Ruijie# show nfpp fw-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  50/-/-      100/-/-

Maximum count of monitored hosts: 20000
Monitor period: 600s
```

Field	Description
Interface(Global)	Global configuration
Status	Enables/Disables FW-guard 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.

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 9.94 show nfpp icmp-guard trusted-host

Use this command to display the trusted host free from being monitored.

**show nfpp icmp-guard trusted-host**

**Parameter  
Description**

Parameter	Description
N/A	N/A

**Defaults** N/A

**Command  
Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the trusted host free from being monitored.

**Examples**

```
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
<b>icmp-guard trusted-host</b>	Sets the trusted host.

**Platform** N/A

**Description**

## 9.95 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*]]]

**Parameter  
Description**

Parameter	Description
<b>statistics</b>	Displays the statistical information of the monitored host.
<i>vid</i>	The VLAN ID.
<i>interface-id</i>	The interface name.
<i>mac-address</i>	The MAC address.

**Defaults** N/A

**Command  
Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the monitored host.

**Examples**

```
Ruijie# show nfpp ip-guard hosts statistics
success  fail   total
-----
100      20     120
```

The following example displays the monitored host.

```
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
<b>clear nfpp ip-guard hosts</b>	Clears the monitored host.

**Platform** N/A**Description**

## 9.96 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** Privileged EXEC mode  
**Mode**

**Usage Guide** N/A

**Configuration** The following example displays the configuration.

**Examples**

```

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.
Isolate-period	Isolate period

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.
Scan-threshold	Scan threshold

#### Related Commands

Command	Description
<b>ip-guard attack-threshold</b>	Sets the global attack threshold.
<b>ip-guard enable</b>	Enables the IP anti-attack function.
<b>ip-guard isolate-period</b>	Sets the global isolate time.
<b>ip-guard monitor-period</b>	Sets the monitor period.
<b>ip-guard monitored-host-limit</b>	Sets the maximum number of the monitored hosts.
<b>ip-guard rate-limit</b>	Sets the global rate-limit threshold.
<b>nfpp ip-guard enable</b>	Enables the IP anti-attack function on the interface.
<b>nfpp ip-guard isolate-period</b>	Sets the isolate time.
<b>nfpp ip-guard policy</b>	Sets the rate-limit threshold and attack threshold.

**Platform** N/A

**Description**

## 9.97 show nfpp ip-guard trusted-host

Use this command to display the trusted host free from being monitored.

**show nfpp ip-guard trusted-host**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the trusted host free from being monitored.

**Examples**

```
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
	<b>ip-guard trusted-host</b>	Sets the trusted host.

**Platform** N/A

**Description**

## 9.98 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
	<b>statistics</b>	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** The following example displays the NFPP log configuration.

**Examples**

```

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	DoS, ISOLATED, ISOLATE_FAILE, SCAN, PORT_ATTACKED

#### Related Commands

Command	Description
<b>clear nfpp log</b>	Clears the NFPP log buffer area.

**Platform** N/A

**Description**

## 9.99 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** Privileged EXEC mode

**Mode****Usage Guide** N/A**Configuration** The following example displays the configuration.**Examples**

```
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.

**Related Commands**

Command	Description
<b>nd-guard attack-threshold</b>	Sets the global attack threshold.
<b>nd-guard enable</b>	Enables the ND anti-attack function.
<b>nd-guard rate-limit</b>	Sets the global rate-limit threshold.
<b>nfpp nd-guard enable</b>	Enables the ND anti-attack function on the interface.
<b>nfpp nd-guard policy</b>	Sets the rate-limit threshold and attack threshold.

**Platform** N/A**Description**

## 9.100 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
<b>statistics</b>	Displays the statistics of the monitored host.
<i>vid</i>	Sets the VLAN ID.
<i>interface-id</i>	Sets the interface name and number.

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the statistics of the host monitored by ND-guard.

**Examples**

```
Ruijie#show nfpp nd-guard hosts statistics
success    fail    total
-----
10         2      12
```

The following example displays the host monitored by ND-guard. The “remain-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
```

**Platform** N/A

**Description**

## 9.101 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,

**trusted-host** { *mac mac\_mask* | *ip mask* | *IPv6/prefixlen* }

**no trusted-host** { **all** | *mac mac\_mask* | *ip mask* | *IPv6/prefixlen* }

**default trusted-host**

Parameter Description	Parameter	Description
	<i>ip</i>	Sets the IP address
	<i>mac</i>	MAC address
	<i>mac_mask</i>	MAC address mask
	<i>IPv6/prefixlen</i>	IPv6 address and mask length
	<i>mask</i>	IP mask
	<b>all</b>	Deletes the configuration of all trusted hosts with the no form of this command.

**Defaults** N/A



**Command** NFPP define configuration mode  
**Mode**

**Usage Guide** The administrator can use this command to set the trusted host free from monitoring. The ICMP packets are allowed to be 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** The following example sets the trusted hosts free form monitoring.

**Examples**

```
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
<b>show nfpp define trusted-host</b>	Displays the trusted host configuration.

**Platform  
Description** N/A

## 10 DoS Protection Commands

### 10.1 ip deny invalid-l4port

Use this command to enable the anti-attack of the self-consumption.

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

**ip deny invalid-l4port**

**no ip deny invalid-l4port**

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 anti-attack of the self-consumption.

```
Ruijie(config)# ip deny invalid-l4port
```

The following example disables the anti-attack of the self-consumption.

```
Ruijie(config)# no ip deny invalid-l4port
```

Related Commands	Command	Description
	<b>show ip deny invalid-l4port</b>	Displays the state of anti-attack of the self-consumption.

**Platform** N/A

**Description**

### 10.2 ip deny invalid-tcp

Use this command to enable the anti-attack of the invalid TCP packets.

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

**ip deny invalid-tcp**

**no ip deny invalid-tcp**

Parameter	Parameter	Description
-----------	-----------	-------------

<b>Description</b>		
	N/A	N/A

**Defaults** The function is disabled by default.

**Command Mode** Global configuration mode

**Usage Guide** N/A

**Configuration** The following example enables the anti-attack of the invalid TCP packets:

**Examples** Ruijie(config)# ip deny invalid-tcp

The following example disables the anti-attack of the invalid TCP packets:

Ruijie(config)# no ip deny invalid-tcp

<b>Related Commands</b>	Command	Description
	<b>show ip deny invalid-tcp</b>	Displays the state of anti-attack of the invalid TCP packets.

**Platform** N/A

**Description**

## 10.3 ip deny land

Use this command to enable the anti-land-attack.

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

**ip deny land**

**no ip deny land**

<b>Parameter Description</b>	Parameter	Description
	N/A	N/A

**Defaults** This function is disabled by default.

**Command Mode** Global configuration mode

**Usage Guide** N/A

**Configuration** The following example enables the anti-land-attack:

**Examples** Ruijie(config)# ip deny land

The following example disables the anti-land-attack:

```
Ruijie(config)# no ip deny land
```

**Related  
Commands**

Command	Description
show ip deny land	Displays the anti-land-attack state.

**Platform** N/A  
**Description**

## 10.4 show ip deny

Use this command to display the state of the anti-DOS-attack.

**show ip deny**

**Parameter  
Description**

Parameter	Description
N/A	N/A

**Defaults** N/A

**Command  
Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the state of the anti-DOS-attack.

**Examples**

```
ruijie#show ip deny
  Protect against Land attack          On
  Protect against invalid L4port attack Off
  Protect against invalid TCP attack   Off
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A  
**Description**

## 10.5 show ip deny invalid-l4port

Use this command to display the state of the anti-consumption-attack.

**show ip deny invalid-l4port**

<b>Parameter Description</b>	<table><tr><th>Parameter</th><th>Description</th></tr><tr><td>N/A</td><td>N/A</td></tr></table>	Parameter	Description	N/A	N/A
Parameter	Description				
N/A	N/A				
<b>Defaults</b>	N/A				
<b>Command Mode</b>	Privileged EXEC mode				
<b>Usage Guide</b>	N/A				
<b>Configuration Examples</b>	<p>The following example displays the state of the anti-consumption-attack.</p> <pre>Ruijie# show ip deny invalid-l4port DoS Protection Mode                State ----- protect against invalid l4port attack Off</pre>				
<b>Related Commands</b>	<table><tr><th>Command</th><th>Description</th></tr><tr><td>N/A</td><td>N/A</td></tr></table>	Command	Description	N/A	N/A
Command	Description				
N/A	N/A				
<b>Platform Description</b>	N/A				

## 10.6 show ip deny invalid-tcp

Use this command to display the state of the anti-attack of the invalid TCP packets.

**show ip deny invalid-tcp**

<b>Parameter Description</b>	<table><tr><th>Parameter</th><th>Description</th></tr><tr><td>N/A</td><td>N/A</td></tr></table>	Parameter	Description	N/A	N/A
Parameter	Description				
N/A	N/A				
<b>Defaults</b>	N/A				
<b>Command Mode</b>	Privileged EXEC mode				
<b>Usage Guide</b>	N/A				
<b>Configuration Examples</b>	<p>The following example displays the state of the anti-attack of the invalid TCP packets.</p> <pre>Ruijie# show ip deny invalid-tcp DoS Protection Mode                State -----</pre>				

```
protect against invalid tcp attack      On
```

**Related  
Commands**

Command	Description
<b>ip deny invalid-tcp</b>	Enables the anti-attack of the invalid TCP packets.

**Platform** N/A**Description**

## 10.7 show ip deny land

Use this command to display the anti-land-attack state.

**show ip deny land**

**Parameter  
Description**

Parameter	Description
N/A	N/A

**Defaults** N/A**Command  
Mode** Privileged EXEC mode**Usage Guide** N/A**Configuration** The following example displays the anti-land-attack state.**Examples**

```
Ruijie# show ip deny land
DoS Protection Mode      State
-----
protect against land attack      On
```

**Related  
Commands**

Command	Description
<b>no ip deny land</b>	Enables the anti-land-attack function.

**Platform** N/A**Description**



## ACL & QoS Commands

---

1. ACL Commands
2. QoS Commands
3. MMU Commands

# 1 ACL Commands

## 1.1 command ID table

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 <i>idx</i>	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.



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 <i>tm-rng-name</i>
tos	Type of service (0 to 15)
cos	Class 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) <i>port</i> 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 <i>tcpf</i>	Match all bits of the TCP flag.
established	Match the RST or ACK bit of the TCP flag.
<i>text</i>	Remark text
<i>in</i>	Filter the incoming packets of the interface
<i>out</i>	Filter the outgoing packets of the interface
{rule mask offset} <sup>+</sup>	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.

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.

- 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**]

- 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*]  
[**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*] [**log**]

- 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*]]

- 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*] [**fragment**] [**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**} [**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*] [**fragment**] [**range** *lower*  
*upper*] [**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] [fragment] [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] [fragment] [range lower upper] [time-range time-range-name] [ match-all
tcp-flag | established ]
```

#### 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] [fragment] [range lower upper] [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
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.

**Defaults** N/A

**Command** Global configuration mode.

**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/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
- ldg
- 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

**Configuration** 1. Example of the standard IP ACL

**Examples** 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** N/A  
**Description**



## 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
<i>id</i>	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.
<i>text</i>	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 <i>id</i>	Displays the access list of a specified number, including the remarks for the access list.
show access-lists <i>name</i>	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
<i>id</i>	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.
<i>text</i>	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** The following example writes a comment for an entry in ACL102.

**Examples** 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 <i>id</i>	Displays the access list of a specified number, including the remarks for the access list entry.
show access-lists <i>name</i>	Displays the access list of a specified name, including the remarks for the access list entry.

**Platform  
Description**

## 1.5 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
	<i>id</i>	Access list number
	<i>name</i>	Access list name

### Defaults

**Command** Privileged EXEC mode  
**Mode**

**Usage Guide** This command is used to clear the counters of packets matching the deny entries in ACLs.

**Configuration** The following example clears the packet matching counter of ACL No. 1:

**Examples** 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** N/A  
**Description**

## 1.6 clear counters access-list

Use this command to clear counters of packets matching ACLs.

**clear counters access-list** [ *id* | *name* ]

Parameter Description	Parameter	Description
	<i>id</i>	Access list number
	<i>name</i>	Access list name

### Defaults

**Command** Privileged EXEC mode  
**Mode**

**Usage Guide** This command is used to clear the counters of packets matching the specified or all ACLs.

**Configuration** The following example clears the packet matching counter of ACL No. 2700:

**Examples**

```
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# clear counters access-list 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
    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**

## 1.7 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] [fragment] [range lower upper] [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] [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] [fragment] [range lower upper] [time-range time-range-name]
```

- 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] [fragment] [range lower upper] [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][fragment] [range lower upper] [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} [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] [fragment] [range lower upper]
[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] [**fragment**] [**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] [**fragment**] [**range** lower upper] [**time-range** time-range-name] [**match-all** tcp-flag | **established**]

#### 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] [**fragment**] [**range** lower upper] [**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**}

#### 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] [**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**] [**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] [**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] [**time-range** time-range-name]

#### Parameter Description

Parameter	Description
sn	ACL entry sequence number
source-ipv6-prefix	Source IPv6 network address or network type
destination-ipv6-prefix	Destination IPv6 network address or network type

<i>prefix-length</i>	Prefix mask length
<i>source-ipv6-address</i>	Source IPv6 address
<i>destination-ipv6-address</i>	Destination IPv6 address
<i>dscp</i>	Differential Service Code Point
<i>dscp</i>	Code value, within the range of 0 to 63
<i>flow-label</i>	Flow label
<i>flow-label</i>	Flow label value, within the range of 0 to 1048575.
<i>protocol</i>	For the IPv6, the field can be ipv6   icmp   tcp   udp and number in the range 0 to 255
<i>time-range</i>	Time range of the packet filtering
<i>time-range-name</i>	Time range name of the packet filtering

**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** N/A

**Description**

## 1.8 expert access-group

Use this command to apply the specified expert access list globally or vxlan on the specified interface.

Use the **no** form of the command to remove the application.

**expert access-group** { *id* | *name* } { **in** | **out** }

**no expert access-group** { *id* | *name* } { **in** | **out** }

**Parameter  
Description**

Parameter	Description
<i>id</i>	Expert access list number: 2700 to 2899
<i>name</i>	Name of the expert access list
in	Specifies filtering on inbound packets.
out	Specifies filtering on outbound packets.

**Defaults** No expert access list is applied globally or vxlan on the interface.

**Command  
mode** Global or vxlan, interface configuration mode.

**Usage Guide** This command is used to apply the specified access list globally or vxlan on the interface to control the input and output data streams. 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
```

The following example shows how to apply the **access-list accept\_00d0f8xxxxxx** only to VXLAN:

```
Ruijie(config)#vxlan 1
Ruijie(config-vxlan)# expert access-group accept_00d0f8xxxxxx_only in
```

**Related  
Commands**

Command	Description
show access-group	Displays the ACL configuration.

**Platform** N/A

**Description**

## 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
	<i>name</i>	Name of the advanced expert access list

**Defaults** N/A

**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** The following example creates an advanced expert access list named adv-acl.

**Examples**

```
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 <i>name</i>	Displays the access list of a specified name.

**Platform** N/A

**Description**

## 1.10 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
	<i>id</i>	Expert access list number: 2700 to 2899.

<i>name</i>	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

## 1.11 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
<i>id</i>	Extended expert access list number: 2700 to 2899
<i>name</i>	Name of the extended expert access list

**Defaults** N/A

**Command mode** Global configuration mode.

**Usage Guide** Use the **show access-lists** command to display the ACL configurations.

**Configuration** Create an extended expert ACL named exp-acl:

**Examples**

```
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
<b>show access-lists</b>	Displays the extended expert ACLs

**Platform** N/A

**Description**

## 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
<i>id</i>	Expert access list number: 2700 to 2899.
<i>name</i>	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** N/A

**Description**

## 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
<i>id</i>	Expert access list number: 2700 to 2899.
<i>name</i>	Name of the expert access list
<i>start-sn</i>	Start sequence number. Range: 1 to 2147483647
<i>inc-sn</i>	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** N/A  
**Description**

## 1.14 global access-group

Use this command to apply the global IP-based access list on the interface. Use the **no** form of this command to remove the global IP-based access list from the interface.

**global access-group**

**no global access-group**

**Parameter  
Description**

Parameter	Description
N/A	N/A

**Defaults** By default, the global IP-based access list is applied on the interface.

**Command mode** Interface configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example applies the global IP-based access list on interface fastEthernet0/0.

```
Ruijie(config)# interface fastEthernet 0/0
Ruijie(config-if-GigabitEthernet 0/0)#global access-group
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A  
**Description**

## 1.15 ip access-group

Use this command to apply a specific access list globally or to an interface or VXLAN. Use the **no** form of this command to remove the access list from the interface.

**ip access-group** {*id* | *name*} {**in** | **out**} [**reflect**] [**control-plane**]

**no ip access-group** { *id* | *name*} {**in** | **out**} [**control-plane**]

### Parameter Description

Parameter	Description
<i>id</i>	IP access list or extended IP access list number: 1 to 199, 1300 to 2699
<i>name</i>	Name of the IP ACL
<b>in</b>	Filters the incoming packets of the interface.
<b>out</b>	Filters the outgoing packets of the interface.

**Defaults** No access list is applied globally or on the interface by default.

**Command mode** Global, interface configuration mode.

**Usage Guide** Use this command to control access to a specified interface, globally.

**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)# ip access-group 120 in
```

### Related Commands

Command	Description
access-list	Defines an ACL.
show access-lists	Displays all ACLs.

**Platform Description** N/A

## 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
	<i>id</i>	Access list number: Standard: 1 to 99, 1300 to 1999; Extended: 100 to 199, 2000 to 2699.
	<i>name</i>	Name of the access list

**Defaults** N/A

**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** The following example creates a standard access list named std-acl.

**Examples**

```
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** N/A

**Description**

## 1.17 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
	<i>id</i>	IP access list number: Standard IP access list: 1 to 99, 1300 to 1999; Extended IP access list: 100 to 199, 2000 to 2699.
	<i>name</i>	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

## 1.18 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
	<i>time</i>	For the access rule with the <b>log</b> 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 <b>deny</b> access entries.
permit	Defines the <b>permit</b> access entries.
show running	Displays running configurations of the device.

**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
<i>id</i>	IP access list number: Standard IP access list: 1 to 99, 1300 to 1999; Extended IP access list: 100 to 199, 2000 to 2699.
<i>name</i>	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
<i>id</i>	IP access list number: Standard IP access list: 1 to 99, 1300 to 1999; Extended IP access list: 100 to 199, 2000 to 2699.
<i>name</i>	Name of the standard or extended IP access list
<i>start-sn</i>	Start sequence number. Range: 1 to 2147483647
<i>inc-sn</i>	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** The following example resequences entries of ACL1:

**Examples** 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** N/A

**Description**

## 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
<i>name</i>	Name of the IPv6 access list.

**Defaults** N/A

**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** The following example creates an IPv6 access list named v6-acl:

**Examples**

```
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**

N/A

**Description**

## 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  
Description**

Parameter	Description
<i>name</i>	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**

The following example enables the counter of packets matching the IPv6 access list named v6-acl:

**Examples**

```
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** N/A

**Description**

## 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
	<i>time</i>	For the access rule with the <b>logging</b> 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 <b>deny</b> access entries.
	permit	Defines the <b>permit</b> 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
<i>name</i>	Name of the IPv6 access list
<i>start-sn</i>	Start sequence number. Range: 1 to 2147483647
<i>inc-sn</i>	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**

The following example resequences entries of IPv6 access list "v6-acl":

**Examples**

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** N/A

**Description**

## 1.25 ipv6 traffic-filter

Use this command to apply an IPv6 access list on the specified interface. Use the **no** form of the command to remove the IPv6 access list from the interface/VXLAN.

**ipv6 traffic-filter** *name* { **in** | **out** }

**no ipv6 traffic-filter** *name* { **in** | **out** }

**Parameter  
Description**

Parameter	Description
<i>name</i>	Name of IPv6 access list
<b>in</b>	Specifies filtering on inbound packets
<b>out</b>	Specifies filtering on outbound packets

**Defaults** N/A

**Command mode** Interface configuration mode.

**Usage Guide** Use this command to apply the IPv6 access list to a specified interface 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
```

**Related  
Commands**

Command	Description
show access-group	Displays ACL configurations on the interface.

**Platform** N/A

**Description**

## 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
-----------	-------------



<i>text</i>	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** The following example writes a comment of “this acl is to filter the host 192.168.4.12” for ACL102.

**Examples**

```
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** N/A

**Description**

## 1.27 mac access-group

Use this command to apply the specified MAC access list globally or on the specified interface . Use the **no** form of the command to remove the access list from the interface.

**mac access-group** { *id* | *name* } { **in** | **out** }

**no mac access-group** { *id* | *name* } { **in** | **out** }

**Parameter Description**

Parameter	Description
<i>id</i>	MAC access list number. The range is from 700 to 799.
<i>name</i>	Name of the MAC access list
<b>in</b>	Specifies filtering on the inbound packets.
<b>out</b>	Specifies filtering on the outbound packets.

- Defaults** No MAC access list is applied by default.
- Command mode** Global, interface configuration mode.
- Usage Guide** Use this command to apply the access list globally or to the interface or VXLAN to filter the inbound or outbound packets based on the MAC address.

**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
```

**Related Commands**

Command	Description
show access-group	Displays the ACL configuration on the interface.

**Platform** N/A

**Description**

## 1.28 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
<i>id</i>	Extended MAC access list number. The range is from 700 to 799.
<i>name</i>	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** N/A  
**Description**

## 1.29 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
<i>id</i>	Extended MAC access list number. The range is from 700 to 799.
<i>name</i>	Name of the extended MAC access list

**Defaults** N/A

**Command mode** Global configuration 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** N/A  
**Description**

## 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
<i>id</i>	Extended MAC access list number: 700 to 799.
<i>name</i>	Name of the extended MAC access list
<i>start-sn</i>	Start sequence number. Range: 1 to 2147483647
<i>inc-sn</i>	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** The following example resequences entries of extended MAC access list “mac-acl”:

**Examples** 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** N/A

**Description**

## 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 ] [ fragment ] [ range lower upper ] [ 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 ] [ fragment ] [ 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 ] [ fragment ] [ range lower upper ] [ 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] [fragment] [range lower upper] [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] [fragment] [range lower upper] [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} [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] [fragment] [range lower upper]
[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] [fragment] [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]
[fragment] [range lower upper] [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]
[fragment] [range lower upper] [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}
```

## 5. Extended IPv6 ACL

```
[sn] permit protocol {source-ipv6-prefix / prefix-length | any | host source-ipv6-address}
{destination-ipv6-prefix / prefix-length | any | host destination-ipv6-address} [dscp dscp] [flow-label
flow-label] [fragment] [range lower upper] [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] [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] [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*] [**time-range** *time-range-name*]

**Parameter  
Description**

Parameter	Description
N/A	N/A

**Defaults** N/A

**Command mode** ACL configuration mode.

**Usage Guide** Use this command to configure the **permit** conditions for the ACL in ACL configuration mode.

**Configuration Examples** The following example shows how to create and display an Expert Extended ACL. This expert ACL permits 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 exp-acl
Ruijie(config-exp-nacl)#permit tcp host 192.168.4.12 host 0013.0049.8272
any any
Ruijie(config-exp-nacl)#deny any any any any
Ruijie(config-exp-nacl)#show access-lists
expert access-list extended exp-acl
10 permit tcp host 192.168.4.12 host 0013.0049.8272 any any
20 deny any any any any
Ruijie(config-exp-nacl)#
```

This example shows how to use the extended IP ACL. The purpose is to permit 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 102
Ruijie(config-ext-nacl)# permit tcp host 192.168.4.12 eq 100 any
Ruijie(config-ext-nacl)# show access-lists
ip access-list extended 102
10 permit 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 102 in
Ruijie(config-if)#
```

This example shows how to use the extended MAC ACL. The purpose is to permit the host with the MAC address 0013.0049.8272 to send Ethernet frames through the type 100 and apply the ACL to interface gigabitethernet 1/1. The configuration procedure is as below:

```

Ruijie(config)#mac access-list extended 702
Ruijie(config-mac-nacl)#permit host 0013.0049.8272 any arp
Ruijie(config-mac-nacl)#show access-lists
mac access-list extended 702
10 permit host 0013.0049.8272 any arp 702
Ruijie(config-mac-nacl)#exit
Ruijie(config)#interface gigabitethernet 1/1
Ruijie(config-if)#mac access-group 702 in

```

This example shows how to use the standard IP ACL. The purpose is to permit the host with the IP address 192.168.4.12 and apply the ACL to interface gigabitethernet 1/1. The configuration procedure is as below:

```

Ruijie(config)#ip access-list standard std-acl
Ruijie(config-std-nacl)#permit host 192.168.4.12
Ruijie(config-std-nacl)#show access-lists
ip access-list standard std-acl
 10 permit host 192.168.4.12
Ruijie(config-std-nacl)#exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ip access-group std-acl in

```

This example shows how to use the extended IPV6 ACL. The purpose is to permit the host with the IP address 192.168.4.12 and apply the ACL to interface gigabitethernet 1/1. The configuration procedure is as below:

```

Ruijie(config)#ipv6 access-list extended v6-acl
Ruijie(config-ipv6-nacl)#11 permit ipv6 host ::192.168.4.12 any
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list extended v6-acl
11 permit 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 access lists.

#### Platform

N/A

#### Description

## 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**



<b>Parameter Description</b>	Parameter	Description
	<i>interface-name</i>	Redirect interface
	<i>id</i>	Access list number
	<i>name</i>	Access list name
<b>Defaults</b>	No redirection is configured.	
<b>Command mode</b>	Interface configuration mode	
<b>Usage Guide</b>	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.	
<b>Configuration Examples</b>	The following example configures access redirection. <pre>Ruijie(config)# interface gigabitEthernet 0/3 Ruijie(config-if-GigabitEthernet 0/3)# redirect destination interface gigabitEthernet 0/2 acl1 in</pre>	
<b>Related Commands</b>	Command	Description
	N/A	N/A
<b>Platform Description</b>	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.

**remark** *text*

**no remark**

<b>Parameter Description</b>	Parameter	Description
	<i>text</i>	Comment that describes the access entry.
<b>Defaults</b>	The access entries have no remarks.	
<b>Command mode</b>	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 is not allowed.  
 Removing an access entry may delete the remark for it as well.

**Configuration** The following example writes remarks for the entry in extended IP access list 102.

**Examples**

```
Ruijie(config)# ip access-list extended 102
Ruijie(config-ext-nacl)# remark first_remark
Ruijie(config-ext-nacl)# permit tcp 1.1.1.1 0.0.0.0 2.2.2.2 0.0.0.0
Ruijie(config-ext-nacl)# 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.

**Platform** N/A

**Description**

## 1.34 show access-group

Use this command to display the access list applied to the interface.

**show access-group** [ **interface** *interface-name* ] [ **vxlan** *vni* ]

Parameter Description	Parameter	Description
	<i>interface</i>	Interface name
	vxlan <i>vni</i>	VNI

**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 in
```

## Description

## 1.35 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
<i>id</i>	Access list number
<i>name</i>	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)
```

## 1.36 show expert access-group

Use this command to display the expert access list applied to the interface.

**show expert access-group** [ **interface** *interface-name* ]

Parameter Description	Parameter	Description
	<i>interface</i>	Interface name

**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** N/A

**Description**

## 1.37 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* ]

Parameter Description	Parameter	Description
	<b>interface</b> <i>Interface-name</i>	Interface name

**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** Ruijie# show ip access-group interface gigabitethernet 0/1  
**Examples** ip access-group aaa in  
Applied On interface GigabitEthernet 0/1.

## 1.38 show ipv6 traffic-filter

Use this command to display the IPv6 access list on the interface.

**show ipv6 traffic-filter [ interface *interface -name* ]**

Parameter Description	Parameter	Description
	<b>interface</b> <i>Interface-name</i>	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** Ruijie# show ipv6 traffic-filter interface gigabitethernet 0/4  
**Examples** ipv6 access-group v6 in  
Applied On interface GigabitEthernet 0/4.

## 1.39 show mac access-group

Use this command to display the MAC access list on the interface.

**show mac access-group [ interface *interface* ]**

Parameter Description	Parameter	Description
	<b>interface</b> <i>Interface-name</i>	Interface name

**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** Ruijie# show mac access-group interface gigabitEthernet 0/3

**Examples** mac access-group mm in

Applied On interface GigabitEthernet 0/3.

## 1.40 show redirect interface

Use this command to display the access redirection configuration.

**show redirect** [ **interface** *interface-name* ]

Parameter Description	Parameter	Description
	<b>interface</b> <i>Interface-name</i>	Interface name

**Defaults** N/A

**Command mode** Privileged EXEC 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** The following example displays the access redirection configuration on interface GigabitEthernet 0/3.

**Examples** 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

## 1.41 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**

The following example enables the SVI filter only for the Layer3 packets.

**Examples**

```
Ruijie(config)#svi router-acls enable
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

## 2 QoS Commands

### 2.1 class

Use this command to add reference to an existing class map. Use the **no** form of this command to remove the class from the policy map.

**class** *class-map-name*

**no class** *class-map-name*

Parameter	Parameter	Description
Description	<i>class-map-name</i>	Reference to a class map.

**Defaults** The function is disabled by default.

**Command Mode** Policy configuration mode

**Usage Guide** N/A

**Configuration** The following example adds reference to the class map named cmap1.

**Examples**

```
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
	<b>show policy-map</b> [ <i>policy-map-name</i> [ <b>class</b> <i>class-map-name</i> ] ]	Displays the policy map.

**Platform** N/A

**Description**

### 2.2 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	Parameter	Description
Description	<i>class-map-name</i>	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
```

## 2.3 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* | **ip** { **dscp** *dscp-vlaue-list* | **precedence** *pre-vlaue-list* } }

**no match** { **access-group** *access\_list* | **ip** { **dscp** *dscp-vlaue-list* | **precedence** *pre-vlaue-list* } }

Parameter	Parameter	Description
Description	<b>access-group</b> <i>access_list</i>	Identifies a numbered or named access list as the match criteria.

<b>ip dscp</b> <i>dscp-value-list</i>	Identifies DSCP values as the match criteria. Multiple DSCP can be configured. The range is from 0 to 63.
<b>ip precedence</b> <i>pre-value-list</i>	Identifies IP precedence values as the match criteria. Multiple IP precedence can be configured. The range is from 0 to 7.

**Defaults** None

**Command Mode** Class map configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example creates a class map named cmap1 to match DSCP 20, 22, 24 and 30.

```
Ruijie(config)# class-map cmap1
Ruijie(config-cmap)# match ip dscp 20 22 24 30
```

**Related Commands**

Command	Description
<b>show class-map</b> [ <i>class-map-name</i> ]	Displays the class map.

**Platform Description** N/A

## 2.4 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	Parameter	Description
<b>Description</b>	<i>default-cos</i>	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	Command	Description
Commands	<b>show mls qos interface</b> <i>interface-id</i>	Displays information of the specified interface.

Platform N/A

Description

## 2.5 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	Parameter	Description
Description	<i>dscp1...dscp8</i>	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	Command	Description
Commands	<b>show mls qos maps cos-dscp</b>	Displays the CoS-DSCP mapping.

Platform N/A

Description

## 2.6 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	Parameter	Description
Description	<i>dscp-list</i>	DSCP list. The range is from 0 to 63.
	<i>cos</i>	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** Global configuration mode.

**Mode**

**Usage Guide** N/A

**Configuration Examples**

```
Ruijie(config)# mls qos map dscp-cos 8 10 16 18 to 0
```

Related Commands	Command	Description
	<b>show mls qos maps dscp-cos</b>	Displays the DSCP-CoS mapping.

**Platform** N/A

**Description**

## 2.7 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 | wfq }**

**no mls qos scheduler**

**default mls qos scheduler**

Parameter	Parameter	Description
Description	<b>sp</b>	Specifies the absolute priority scheduling.
	<b>wfq</b>	Specifies the weighted fair queuing.

**Defaults** The default queue scheduling is **wfq**.

**Command** Global configuration mode.

**Mode**

**Usage Guide** N/A

**Configuration** The following example specifies the sp scheduling.

**Examples**

```
Ruijie(config)# mls qos scheduler sp
```

Related Commands	Command	Description
	<b>show mls qos scheduler</b>	Displays the output queue scheduling.

**Platform** N/A

**Description**

## 2.8 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 }**

**no mls qos trust**

**default mls qos trust**

Parameter Description	Parameter	Description
	<b>cos</b>	Specifies the CoS trust mode.
	<b>dscp</b>	Specifies the DSCP trust mode.

**Defaults** No trust mode is configured by default.

**Command Mode** Interface configuration mode.

**Usage Guide** N/A

**Configuration** The following example configures the CoS trust mode.

**Examples**

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mls qos trust cos
```

Related Commands	Command	Description
	<b>show mls qos interface <i>interface-id</i></b>	Displays the specified interface configuration.

**Platform** N/A

**Description**

## 2.9 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	Parameter	Description
Description	<i>rate-bps</i>	Bandwidth limit value per second (The unit is KBits). This value depends on the specific product.
	<i>burst-byte</i>	Burst traffic limit value (The unit is KBytes). This value depends on the specific product.
	<b>drop</b>	Drops the packet. This is available only when the packet exceeds the bandwidth limit.
	<b>dscp</b> <i>new-dscp</i>	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.
	<b>cos</b> <i>new-cos</i>	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.
	<b>none-tos</b>	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 16 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
	<b>show policy-map</b> [ <i>policy-map-name</i> [ <b>class</b> <i>class-map-name</i> ] ]	Displays the policy map configuration.

**Platform Description** N/A

## 2.10 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	Parameter	Description
Description	<i>policy-map-name</i>	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”. Sets the rate limit value to 10 Mbps, the burst traffic limit value to 256 Kbps, and discard packets which exceed the limit.

```
Ruijie(config)# policy-map po
Ruijie(config-pmap)# class cmap1
Ruijie(config-pmap-c)# police 10240 256
exceed-action drop
```

Related Commands	Command	Description
	<b>show policy-map</b> [ <i>policy-map-name</i> [ <b>class</b> <i>class-map-name</i> ] ]	Displays the policy map configuration.

**Platform Description** N/A

## 2.11 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	Parameter	Description
Description	N/A	N/A

**Defaults** The default output queue scheduling policy is WFQ.

**Command** Global configuration mode.





**Description**

## 2.13 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** [ **ucast** | **mcast** ] *queue-id* **bandwidth** { **minimum** | **maximum** } *bandwidth*

**no qos queue** [ **ucast** | **mcast** ] *queue-id* **bandwidth** { **minimum** | **maximum** }

**default qos queue** *queue-id* **bandwidth** { **minimum** | **maximum** }

Parameter	Parameter	Description
<b>Description</b>	<i>queue-id</i>	Queue ID. The range is from 1 to 8.
	<b>bandwidth</b>	Bandwidth value. The value range depends on the specific product.
	{ <b>minimum</b>	
	<b>maximum</b> }	
	<i>bandwidth</i>	

**Defaults** No minimum or maximum of interface bandwidth to a queue is configured by default.

**Command** Interface configuration mode

**Mode**

**Usage Guide** N/A

**Configuration Examples** The following example configures the minimum interface bandwidth of unicast queue 1 to 5 Mbps, and the maximum to 10 Mbps.

```
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# qos queue 1 bandwidth maximum 10240
Ruijie(config-if-GigabitEthernet 0/1)# qos queue 1 bandwidth minimum 5120
Ruijie(config-if-GigabitEthernet 0/1)# qos queue 2 bandwidth minimum 2048
```

Related	Command	Description
<b>Commands</b>	<b>show qos bandwidth</b> [ <b>interfaces</b> <i>interface-id</i> ]	Displays the interface bandwidth of the queue.

**Platform** N/A

**Description**

## 2.14 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	Parameter	Description
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

## 2.15 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	Parameter	Description
Description	<b>input</b>	Configures input rate limiting.
	<b>output</b>	Configures output rate limiting.
	<i>bps</i>	Bandwidth limit value per second (The unit is KBits). This value depends on the specific product.
	<i>burst-size</i>	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** N/A

**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
	<b>show mls qos rate-limit</b> [ <b>interface</b> <i>interface-id</i> ]	Displays the rate limiting configuration of the interface.

**Platform** N/A  
**Description**

## 2.16 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.

**service-policy** { **input** } *policy-map-name*

**no service-policy** { **input** } *policy-map-name*

**default service-policy** { **input** } *policy-map-name*

Parameter Description	Parameter	Description
	<i>policy-map-name</i>	Policy map name
	<b>input</b>	Applies the policy map to the input direction.

**Defaults** No policy map is configured on the global, interface or virtual group by default.

**Command Mode** Global configuration mode, Interface configuration mode, and virtual group 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
```

Related Commands	Command	Description
	<b>show mls qos interface policers</b>	Displays the policy map configuration on the interface.

<b>show mls qos virtual-group policers</b>	Displays the policy map configuration on the virtual group.
--	---

**Platform** N/A

**Description**

## 2.17 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 value from the traffic.

**set** { **ip dscp** *new-dscp* | **cos** *new-cos*

**no set** { **ip dscp** | **cos** }

Parameter	Parameter	Description
<b>Description</b>	<b>ip dscp</b> <i>new-dscp</i>	Configures the DSCP value for the traffic. The range is from 0 to 63.
	<b>cos</b> <i>new-cos</i>	Configures the CoS value for the traffic. The range is from 0 to 7.

**Defaults** No CoS, DSCP or VID 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
	<b>show</b> <b>policy-map</b> [ <i>policy-map-name</i> [ <b>class</b> <i>class-map-name</i> ] ]	Displays the policy map configuration on the interface.

**Platform** N/A

**Description**

## 2.18 show class-map

Use this command to display the class map.

**show class-map** [ *class-map-name* ]

Parameter	Parameter	Description
Description	<i>class-map-name</i>	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

## 2.19 show mls qos interface

Use this command to display the QoS configuration of the interface.

**show mls qos interface** [ *interface-id* ] [ **policers** ]

Parameter	Parameter	Description
Description	<i>interface-id</i>	Interface name

<b>policers</b>	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 GigabitEthernet 1/3.

```
Ruijie# show mls qos interface gigabitethernet 1/3

Interface: GigabitEthernet 0/3

Ratelimit input: 10240 256

Ratelimit output: 51200 4096

Attached input  policy-map: pmap1

Attached output policy-map:

Default trust: dscp

Default cos: 3
```

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.

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
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	N/A	N/A

**Platform** N/A

**Description**

## 2.20 show mls qos maps

Use this command to display DSCP-CoS mapping, CoS-DSCP mapping mapping.

**show mls qos maps [ cos-dscp | dscp-cos ]**

Parameter	Parameter	Description
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** The following example displays the CoS-DSCP mapping.

**Examples**

```
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	Command	Description
Commands	N/A	N/A
Platform	N/A	
Description		

2.21 show mls qos queueing

Use this command to display the QoS queueing configuration.

**show mls qos queueing**

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** The following example displays the QoS queuing configuration.

**Examples**

```
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
```

```
wfq bandwidth weights:
```

```
qid weights
```

```
--- -----
```

```
1 3
```

```
2 4
```

```
3 5
```

```
4 6
```

```
5 7
```

```
6 8
```

```
7 9
```

```
8 10
```

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.

wfq bandwidth weights	Indicates the WFQ queue weight.
cos	Indicates the CoS value.
qid	Indicates the queue ID.
weights	Indicates the weight value

Related Commands	Command	Description
	N/A	N/A

Platform N/A

Description

## 2.22 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	Parameter	Description
Description	<b>interface</b> <i>interface-id</i>	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	Command	Description
Commands	N/A	N/A

**Platform** N/A  
**Description**

## 2.23 show mls qos scheduler

Use this command to display the queue scheduling policy.

**show mls qos scheduler**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** None

**Command Mode** Privileged EXEC mode, global configuration mode, interface configuration mode.

**Usage Guide** N/A

**Configuration** The following example displays the queue scheduling policy.

### Examples

```
Ruijie# show mls qos scheduler  
  
Global Multi-Layer Switching scheduling  
  
Weighted Fair Queue
```

The fields in the output of this command are described in the following table.

Field	Description
Weighted Fair Queue	Indicates that the queue scheduling policy is WFQ.  The other queue scheduling policies are listed as follows: SP: Strict Priority

Related	Command	Description
Commands	N/A	N/A

**Platform** N/A  
**Description**

## 2.24 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	Parameter	Description
Description	<i>virtual-group-number</i>	Virtual group number. The range is from 1 to 128.
	<b>policers</b>	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

## 2.25 show policy-map

Use this command to display policy maps.

**show policy-map** [ *policy-map-name* [ **class** *class-map-name* ] ]

Parameter	Parameter	Description
Description	<i>policy-map-name</i>	Policy map name
	<i>class-map-name</i>	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 configuration of policy map “pmap1”.

```
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 DSCP value is 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** N/A

**Description**

## 2.26 show qos bandwidth

Use this command to display the bandwidth configuration.

**show qos bandwidth** [ **interfaces** *interface-id* ]

Parameter Description	Parameter	Description
	<i>interface-id</i>	Interface name

**Defaults** None

**Command Mode** Privileged EXEC mode, global configuration mode, interface configuration mode.

**Usage Guide** N/A

**Configuration Examples** The following example displays the bandwidth configuration of interface GigabitEthernet 0/1.

```
Ruijie# show qos bandwidth interface gigabitEthernet 0/1
Interface: GigabitEthernet 0/1
```

```
-----
queue-id | minimum-bandwidth | maximum-bandwidth
-----
      1           5120           10240
      2           2048              0
      3              0              0
      4              0              0
      5              0              0
      6              0              0
      7              0              0
      8              0              0
-----
Total minimum-bandwidth:           7168
Total maximum-bandwidth:          10240
```

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.
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.

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 2.27 show queueing wred interface

Use this command to display WRED settings on the interface.

**show queueing wred interface** *interface-id*

Parameter Description	Parameter	Description
	<i>interface-id</i>	Interface name

**Defaults** None

**Command mode** Privileged EXEC mode, global configuration mode, interface configuration mode.

**Usage Guide** N/A

**Configuration Examples** The following example displays the WRED settings on interface GigabitEthernet 1/3.

```
Ruijie# show queueing wred interface gigabitethernet 1/3

---  -----
qid  max_1 min_1 prob_1  max_2 min_2 prob_2
---  -----
1    100   30    100    100   70    100
```

```

2   100  60  100    100  30  100
3   100  80  30    100  30  40
4   100  80  100    100  100  100
5   100  80  100    100  100  100
6   100  80  100    100  100  100
7   100  80  100    100  100  100
8   100  80  100    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_x	Indicates the upper threshold of the x group.
min_x	Indicates the lower threshold of the x group.
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

N/A.



**Description**

## 2.28 show virtual-group

Use this command to display the member port in the virtual group.

**show virtual-group** [ *virtual-group-number* | **summary** ]

Parameter	Parameter	Description
Description	<i>virtual-group-number</i>	Virtual group number. The range is from 1 to 128.
	<b>summary</b>	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

## 2.29 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
<i>virtual-group-number</i>	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
<b>show virtual-group</b> [ <i>virtual-group-number</i>   <b>summary</b> ]	Displays the virtual group configuration.

**Platform  
Description**

N/A

## 2.30 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
<i>weight1...weight8</i>	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.

**Command Mode** Global configuration mode.

**Usage Guide** If the weight value is 0, the SP scheduling policy is applied.

**Configuration** The following example configures the WFQ queue weight ratio to 1:1:2:4:4:4:6:8.

**Examples**

```
Ruijie(config)# wfq-queue bandwidth 1 1 2 4 4 4 6 8
```

**Related Commands**

Command	Description
<b>show mls qos queueing</b>	Displays the QoS queuing configuration.

**Platform** N/A

**Description**

## 2.31 wrr-queue 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
<i>threshold_id</i>	Threshold number. The range is from 1 to 2. Up to two threshold values can be configured.
<i>cos_N</i>	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** Global 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** The following example maps CoS 1, 6 to threshold 2.

**Examples**

```
Ruijie(config)#wrr-queue cos-map 2 1 6
```

**Related  
Commands**

Command	Description
<b>show queueing wred interface</b> <i>interface-id</i>	Displays the WRED configuration on the interface.

**Platform** N/A.

**Description**

## 2.32 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.

**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
<i>queue_id</i>	Queue ID.
<i>thrN</i>	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** N/A

**Configuration** The following example configures the low WRED drop thresholds to 60 and 70 for queue 1.

**Examples**

```
Ruijie(config)# interface gigabitethernet 1/3
```

```
Ruijie(config-if-GigabitEthernet 1/3)# wrr-queue random-detect min-threshold  
1 60 70
```

**Related  
Commands**

Command	Description
---------	-------------

<b>show queueing wred interface</b> <i>interface-id</i>	Displays the WRED configuration on the interface.
---	---

**Platform** N/A.

**Description**

## 2.33 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
<i>queue_id</i>	Queue ID.
<i>probN</i>	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
<b>show queueing wred interface</b> <i>interface-id</i>	Displays the WRED configuration on the interface.

**Platform** N/A.

**Description**

## 3 MMU Commands

### 3.1 clear mmu queue-buffer peaked

Use this command to clear the historical peak value of the queue buffer.

**clear mmu queue-buffer peaked**

<b>Parameter Description</b>	Parameter	Description
	N/A	N/A
<b>Command Mode</b>	Privileged EXEC mode/Global configuration mode/Interface configuration mode	
<b>Default Level</b>	14	
<b>Usage Guide</b>	N/A	
<b>Configuration Examples</b>	The following example clears the historical peak value of the buffer.	
	<pre>Ruijie# clear mmu queue-buffer peaked</pre>	
<b>Platform Description</b>	N/A	

### 3.2 clear queue-counters

Use this command to clear queue statistics.

**clear queue-counter** [*interface interface\_id*][*inner-port* [*slot slot\_id*]]

<b>Parameter Description</b>	Parameter	Description
	<i>interface_id</i>	Port Number
	<i>slot_id</i>	Slot Number
<b>Command Mode</b>	Privileged EXEC mode/Global configuration mode/Interface configuration mode	

**Default Level** 14

**Usage Guide** N/A

**Configuration** The following example clears all queue statistics.

**Examples**

```
Ruijie# clear queue-counter
```

The following example clears queue statistics of an interface.

```
Ruijie# clear queue-counter Interface TenGigabitEthernet 1/9
```

**Platform**  
**Description** N/A

### 3.3 mmu buffer-mode

Use this command to configure global buffer mode.

**mmu buffer-mode { normal | small | large }**

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

**no mmu buffer-mode**

**Parameter**  
**Description**

Parameter	Description
<b>normal</b>	Normal buffer mode
<b>small</b>	Small buffer mode
<b>large</b>	Large buffer mode

**Defaults** The default is normal buffer mode.

**Command**  
**Mode** Global configuration mode

**Default Level** 14

**Usage Guide** The configuration takes effect after the device is restarted.

**Configuration** The following example configures the large buffer mode.

**Examples**

```
Ruijie#config
Ruijie(config)# mmu buffer-mode large
This command will lead to reload the switch, and all configuration will be saved.
Are you sure to continue[Y/N]: Y
```

**Platform**

N/A

**Description**

### 3.4 mmu usage-warn-limit

Use this command to configure the usage warning threshold.

**mmu usage-warn-limit** [**voq** {*queue-id1* [*queue-id2* [*queue-idN*]}] **set** *value*

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

**no mmu usage-warn-limit**

**Parameter  
Description**

Parameter	Description
<b>voq</b>	Performs buffer management on the VOQ queue.
<i>queue-idN</i>	Queue ID
<i>value</i>	Usage warning threshold.

**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 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 voq queue 3 and 8 to 80%.



```
Ruijie#config
Ruijie(config)# int tel/1
Ruijie(config-if)# mmu usage-warn-limit voq 3 8 set 80
```

**Platform**  
**Description**

N/A

### 3.5 mmu queue-guarantee

Use this command to configure the guaranteed buffer.

**mmu queue-guarantee voq** {*queue-id1* [*queue-id2* [*queue-idN*]} **set** *value*

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

**no mmu queue-guarantee voq**

**Parameter**  
**Description**

Parameter	Description
<b>voq</b>	Performs buffer management on the voq.
<i>queue-idN</i>	Queue ID
<i>value</i>	Sets the number of guaranteed buffer, in the unit of cells.

**Defaults** The default varies with different products.

**Command** Interface configuration mode  
**Mode**

**Default Level** 14

**Usage Guide** This command is executed in different ways on different devices.

**Configuration** The following example configures guaranteed buffer for unicast queue.

**Examples**

```
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
```

**Platform** N/A

**Description**

## 3.6 mmu queue-thredshold

Use this command to configure the shared buffer.

**mmu queue-thredshold voq** {*queue-id1* [*queue-id2* [*queue-idN*]} **set** *th%*

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

**no mmu queue-thredshold voq**

**Parameter  
Description**

Parameter	Description
<b>voq</b>	Performs buffer management on the voq.
<i>queue-idN</i>	Queue ID
<i>th%</i>	Total shared buffer * threshold = Available buffer

**Defaults** The default varies with different products.

**Command Mode** Interface configuration mode

**Default Level** 14

**Usage Guide**

1. If you want to enable MMU based on voq, restart all line cards or switch for this command to take effect. If you reset a specific line card only, the command will take effect on that line card only. If you reset a specific line card, the command will take effect on that line card only.
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 shared buffer for voq.

```
Ruijie#config
Ruijie(config)# interface tenGigabitEthernet 1/9
Ruijie(config-if)#mmu queue-thredshold voq 1 3 7 8 set 80
Ruijie(config-if)#exit
Ruijie(config)#exit
```

**Platform Description** N/A

### 3.7 show queue-buffer interface

Use this command to display buffer usage of interfaces.

**show queue-buffer interface** { *interface-id* [*slot slot\_id*] }

<b>Parameter Description</b>	Parameter	Description
	<i>interface-id</i>	Interface
	<i>slot_id</i>	Slot ID (only on the voq-supported device).
<b>Command Mode</b>	Privileged EXEC mode/Global configuration mode/Interface configuration mode	
<b>Default Level</b>	14	
<b>Usage Guide</b>	N/A	

**Configuration Examples** The following example displays buffer usage of the specified interface base on voq..

#### Examples

```
Ruijie#show queue-buffer interface TenGigabitEthernet 7/1
Interface GigabitEthernet 7/1 :
Slot 1 Port Group 1:
Type Queue Used cells Available cells Usage Usage warn limit Peaked cells
Voq 1 0 5554 0% 0% 0
Voq 2 0 5554 0% 0% 0
Voq 3 0 5554 0% 0% 0
Voq 4 0 5554 0% 0% 0
Voq 5 0 5554 0% 0% 0
Voq 6 0 5554 0% 0% 0
Voq 7 0 5554 0% 0% 0
Voq 8 0 5554 0% 0% 0
Slot Port Group Total cells Total usage Usage warn limit Static used cells
Global shared cells Available shared cells
1 1 19456 0% 0% 8364 11092
11092
```

## Slot 1 Port Group 2:

Type	Queue	Used cells	Available cells	Usage	Usage warn limit	Peaked cells
Voq	1	0	5554	0% 0%	0	
Voq	2	0	5554	0% 0%	0	
Voq	3	0	5554	0% 0%	0	
Voq	4	0	5554	0% 0%	0	
Voq	5	0	5554	0% 0%	0	
Voq	6	0	5554	0% 0%	0	
Voq	7	0	5554	0% 0%	0	
Voq	8	0	5554	0		

Slot	Port Group	Total cells	Total usage	Usage warn limit	Static used cells
Global	shared cells	Available	shared cells		
1	2	19456	0%	0%	8364
					11092

## Slot 2 Port Group 1:

Type	Queue	Used cells	Available cells	Usage	Usage warn limit	Peaked cells
Voq	1	0	5554	0% 0%	0	
Voq	2	0	5554	0% 0%	0	
Voq	3	0	5554	0% 0%	0	
Voq	4	0	5554	0% 0%	0	
Voq	5	0	5554	0% 0%	0	
Voq	6	0	5554	0% 0%	0	
Voq	7	0	5554	0% 0%	0	
Voq	8	0	5554	0% 0%	0	

Slot	Port Group	Total cells	Total usage	Usage warn limit	Static used cells
Global	shared cells	Available	shared cells		
2	1	19456	0%	0%	8364
					11092

Field	Description
Type	Queue type, including unicast queue, multicast queue and voq.
Queue	Queue number, in the range from 1 to 8.
Used cells	Used buffer cells of the specified queue.
Available cells	Available buffer cells of the specified queue. The buffer cells that queues apply for are no greater than the available cells.
Peaked cells	Historical peak value of buffer cells.
Total cells	Total buffer cells of the port group of the specified slot.
Static used cells	Used guaranteed buffer cells of the port group of the specified slot.
Global shared cells	Total shared buffer cells of the port group of the specified slot.
Available shared cells	Available shared buffer cells of the port group of the specified slot.

**Platform**  
**Description**

N/A

### 3.8 show queue-counter interface

Use this command to display buffer queue statistics of interfaces.

**show queue-counter interface** { *interface-id* [**slot** *slot\_id*] }

Parameter Description	Parameter	Description
	<i>interface-id</i>	Interface
	<i>slot_id</i>	Slot ID (only on the voq-supported device)

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

**Default Level** 14

**Usage Guide** N/A

**Configuration** The following example displays buffer queue statistics of the specified interface based on voq.

**Examples**

```
N18K#show queue-counter interface tenGigabitEthernet 2/4/1
```

```
Interface TenGigabitEthernet 2/4/1:
```

```
Slot 2/4 Port Group 1:
```

```
Voq
```

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

```
Voq
```

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

0	6	0	0	0	
0	7	0	0	0	
0	8	0	0	0	
Slot 2/4 Port Group 2:					
Voq					
	Queue	Transmitted Bytes	Dropped Bytes	Frame Loss Rate(%)	Transmit
	Rate (bps)				
0	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	
Voq					
	Queue	Transmitted Packets	Dropped Packets	Frame Loss Rate(%)	Transmit
	Rate (pps)				
0	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				

**Platform**  
**Description**

N/A





## Reliability Configuration Commands

---

1. REUP Commands
2. DLDP Commands
3. VRRP Commands
4. VRRP Plus Commands
5. BFD Commands
6. IP Event Dampening Commands
7. VSU Commands
8. RNS&Track Commands

# 1 REUP Commands

## 1.1 switchport backup interface *interface-id*

Use this command to configure the REUP dual link backup interface.

**switchport backup interface** *interface-id*

**no switchport backup**

Parameter Description	Parameter	Description
	<i>interface-id</i>	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 shows how to set 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
	<b>show interface switchport backup</b>	Displays the dual link backup configuration on the switch.

**Platform** N/A.

**Description**

## 1.2 switchport backup interface preempt

Use this command to configure the REUP link preempt function.

**switchport backup interface** *interface-id* **preempt mode** { **forced** | **bandwidth** | **off** }

**switchport backup interface** *interface-id* **preempt delay** *delay-time*

**no switchport backup interface** *interface-id* **preempt delay**

Parameter	Parameter	Description
-----------	-----------	-------------

Description		
	<i>interface-id</i>	The interface id of the backup link.
	<i>delay-time</i>	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 <b>forced</b> , <b>bandwidth</b> and <b>off</b> . In the <b>bandwidth</b> preemption mode, the interface with high bandwidth has priority over other interfaces to transmit the data. In the <b>forced</b> preemption mode, the primary has priority over backup interfaces to transmit the data. No preemption event occurs in the <b>off</b> 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 shows how to set the dual link backup, with fa 0/1 and fa 0/2 as the primary interface and backup interface, set the bandwidth preemption mode and 40s preemption delay: <pre>Ruijie(config)# interface fa 0/1 Ruijie(config-if)# switchport backup interface fa 0/2 preemption mode bandwidth Ruijie(config-if)# switchport backup interface fa 0/2 preemption delay 40</pre>	
Related Commands	Command	Description
	<b>show interface switchport backup</b>	Displays the dual link backup configuration.
Platform	N/A.	
Description		

## 1.3 mac-address-table update group

Use this command to set the mac-address-table update group.

**mac-address-table update group** [ *group-num* ]

**no mac-address-table update group**

Parameter Description	Parameter	Description
	<i>group-num</i>	The mac-address-table update group ID.
Defaults	The default group number is 1. By default, no mac-address-table update group is configured.	

**Command** Interface configuration mode.  
**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
	<code>show mac-address-table update group detail</code>	Displays the mac-address-table update group information.

**Platform** N/A.  
**Description**

## 1.4 mac-address-table move update transit

Use this command to enable REUP to transmit the mac-address-table update messages.

**mac-address-table move update transit**

**no mac-address-table move update transit**

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

**Defaults** Disabled.

**Command** Global configuration mode.  
**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
	<code>mac-address-table move update transit vlan</code>	Enables REUP to transmit the

	mac-address-table update messages.
--	------------------------------------

**Platform** N/A.

**Description**

## 1.5 mac-address-table move update transit vlan

Use this command to enable REUP to transmit the mac-address update messages.

**mac-address-table move update transit vlan** *vid*

**no mac-address-table move update transit vlan**

Parameter Description	Parameter	Description
	<i>vid</i>	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
	<b>mac-address-table move update transit</b>	Enables REUP to receive the mac-address-table update messages.

**Platform** N/A.

**Description**

## 1.6 mac-address-table move update max-update-rate

Use this command to configure the maximum number of MAC address update packets sent per second.

**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 shows how to configure 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.

## 1.7 mac-address-table move update receive

Use this command to enable REUP to receive the mac-address-table update messages.

**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 update messages on the uplink switch.

**Configuration Examples**

```
Ruijie(config)# mac-address-table move update receive
```

Related Commands	Command	Description
	<b>mac-address-table move update transit</b>	Enables REUP to transmit the mac-address-table update messages.

**Platform** N/A.

**Description**

## 1.8 mac-address-table move update receive vlan

Use this command to configure the VLANs processing MAC address update packets.

**mac-address-table move update receive vlan** *vlan-range*

**no mac-address-table move update receive vlan** *vlan-range*

Parameter Description	Parameter	Description
	<i>vlan-range</i>	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** The following example configures VLANs processing MAC address update packets:

**Examples** Ruijie(config)# no mac-address-table move update receive vlan 20

Related Commands	Command	Description
	<b>mac-address-table move update receive</b>	Enables REUP to receive MAC address update packets.

**Platform** N/A.

**Description**

## 1.9 switchport backup interface prefer

Use this command to configure VLAN load balancing on a link. The **no** form of this command is used

to delete the configured VLAN load strategy.

**switchport backup interface** *interface-id* **prefer instance** *instance-range*

**no switchport backup interface** *interface-id* **prefer**

Parameter Description	Parameter	Description
	<i>interface-id</i>	Interface ID of the backup link.
	<i>instance-range</i>	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** The following example configures VLAN load balancing on dual links.

**Examples**

```
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport backup interface gigabitEthernet 0/2 prefer
instance 1
```

Related Commands	Command	Description
	<b>show interface switchport backup</b>	Displays the configuration of dual-link backup on the switch.
	<b>spanning-tree mst configuration</b>	Configures MSTP instances.

**Platform** N/A.

**Description**

## 1.10 link state track

Use this command to enable the link state track group. The **no** form of this command is used to disable a link state track group

**link state track** [ *num* ]

**no link state track** [ *num* ]

Parameter Description	Parameter	Description
	<i>num</i>	Interface ID of the link aggregation group.

**Defaults** N/A.

**Command** Global configuration mode.



**Mode**

**Usage Guide** First create a link state track group and then add a port into the specified link state track group.

**Configuration** The following example shows how to create a link state track group:

**Examples** Ruijie(config)# link state track 1

**Related  
Commands**

Command	Description
link state group	Adds the port to the specified link state track group.

**Platform** N/A.

**Description**

## 1.11 link state group

Use this command to add the port into the specified link state track group. The **no** form of this command is used 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
<i>num</i>	ID of the link state track group.
<b>upstream</b>	Configures the port to be an upstream port in the link state track group.
<b>downstream</b>	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** Interface configuration mode.

**Mode**

**Usage Guide** First create a link state track group and then add a port into the specified link state track group.

**Configuration** The following example shows how to add the port fa0/2 into the link state track group:

**Examples** Ruijie(config)# link state track 1  
Ruijie(config)# interface fa 0/2  
Ruijie(config-if)# link state group 1 upstream

**Related  
Commands**

Command	Description
---------	-------------

<b>link state track</b>	Enables a link state track group.
-------------------------	-----------------------------------

**Platform** N/A.

**Description**

## 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
	<i>interface-id</i>	The interface id of the dual link backup.
	<b>detail</b>	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** Ruijie # show interfaces switchport backup detail

**Examples** 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** N/A.

**Description**

## 1.13 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**

<b>Parameter Description</b>	Parameter	Description
	<b>detail</b>	Displays the detailed information about the mac-address-table update group.
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Privileged EXEC mode.	
<b>Usage Guide</b>	N/A.	
<b>Configuration Examples</b>	<pre>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</pre>	
<b>Related Commands</b>	Command	Description
	N/A.	N/A.
<b>Platform Description</b>	N/A.	

## 1.14 show mac-address-table move update

Use this command to display the statistics about the MAC address updates received on the interface.

**show mac-address-table move update**

<b>Parameter Description</b>	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode.

**Usage Guide** N/A.

**Configuration** Ruijie#show mac-address-table move update

**Examples** 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 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
	<i>num</i>	ID of a link state track group.

**Defaults** N/A.

**Command  
Mode** Privileged EXEC mode.

**Usage Guide** N/A.

**Configuration** The following example displays the link state track group:

**Examples**

```
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.

## 2 DLDP Commands

### 2.1 clear dldp

Use this command to clear statistics about the times that DLDP is down or up at a specified monitoring point for renewing statistics.

**clear dldp** [ **interface** *interface-name* [ *ip-address* ] ]

Parameter	Parameter	Description
Description	<i>interface-name</i>	Name of an Layer 3 interface
	<i>ip-address</i>	IP address of a peer device

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** DLDP records statistics about the times that DLDP is down or up. You can use this command to clear statistics about the 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 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 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 times that DLDP is down or up at all monitoring points on all interfaces.

```
Ruijie#clear dldp
```

The following example clears statistics about the times that DLDP is down or up at all monitoring points on the interface *vlan 1*.

```
Ruijie#clear dldp interface vlan 1
```

The following example clears statistics about the times that DLDP is down or up about the peer device 10.83.132.1 on the interface *vlan 1*.

```
Ruijie# clear dldp interface vlan 1 10.83.132.1
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 2.2 dldp

Use this command to configure DLDP detection.

Use the **no** form of this command to disable this function .

**dldp** *ip-address* [ *next-hop-ip* ] [**mac-address** *mac-addr*] [ **interval** *tick* | **retry** *retry-num* | **resume** *resume-num* ]

**no dldp** *ip-address*

Parameter	Parameter	Description
Description	<i>ip-address</i>	IP address of the peer device to be detected
	<i>next-hop-ip</i>	Next-hop IP address specified when the device to be detected belongs to another different network
	<b>mac-address</b> <i>mac-addr</i>	The bound MAC address. If a next hop exists, its MAC address is configured.
	<b>interval</b> <i>tick</i>	Detection interval. The value range is from 1 to 6,000 in the unit of ticks, where 1 tick is equal to 10 milliseconds. The value must be an integral multiple of five.
	<b>retry</b> <i>retry-num</i>	Number of retry times. The value range is from 1 to 3,600.
	<b>resume</b> <i>resume-num</i>	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 values of *retry-num* and *resume-num* are both 3.

**Command Mode** Interface configuration mode

**Usage Guide** You can use this command to enable DLDP detection to quickly detect Ethernet link faults.  
DLDP detection detects multiple IP addresses on Layer 3 ports. If they respond no ICMP packets, they are considered down; if one of them recovers response, they are considered up.

**Configuration Examples**

```
The following example enables DLDP detection for the device 10.83.132.10.
Ruijie#config
Ruijie(config)#interface vlan 1
Ruijie(config-if-VLAN 1)#ip address 10.83.132.1 255.255.255.0
Ruijie(config-if-VLAN 1)#dldp 10.83.132.10

The following example enables DLDP detection for the device 10.83.132.10 in
another different network segment.
Ruijie#config
Ruijie(config)#interface vlan 1
Ruijie(config-if-VLAN 1)#ip address 10.83.132.1 255.255.255.0
Ruijie(config-if-VLAN 1)#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)#interface vlan 1
Ruijie(config-if-VLAN 1)#no dldp 10.83.132.10
```

Related Commands	Command	Description
	N/A	N/A

Platform  
Description

N/A

## 2.3 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
	<i>tick</i>	Detection interval (in ticks), in the range from 5 to 6,000. The value must be a multiple of 5. (1tick = 10 milliseconds)

Defaults      The default is 10 ticks (100 ms).

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



## 2.4 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	Parameter	Description
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.

The following example sets DLDP to the passive mode.

**Configuration Examples**

```
Ruijie#config
Ruijie(config)#interface vlan 1
Ruijie(config-if-VLAN 1)#ip address 10.83.132.1 255.255.255.0 //Set an IP
address for vlan1.
Ruijie(config-if-VLAN 1)#dldp passive
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 2.5 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	Parameter	Description
Description	retry-num	Retry count, in the range from 1 to 3,600
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.	
	<pre>Ruijie#config Ruijie(config)#dldp retry 4</pre>	
Related Commands	Command	Description
	N/A	N/A
Platform Description	N/A	

## 2.6 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**

<b>Parameter</b>	<b>Parameter</b>	<b>Description</b>
<b>Description</b>	<i>resume-num</i>	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.
<b>Defaults</b>	The default is 3.	
<b>Command Mode</b>	Global configuration mode	
<b>Usage Guide</b>	This command is used to set the DLDP recovery count.	
<b>Configuration Examples</b>	The following example sets the DLDP recovery count to 4.	
	<pre>Ruijie#config Ruijie(config)#dldp resume 4</pre>	

Related	Command	Description
Commands	N/A	N/A

Platform  
Description

N/A

## 2.7 show dldp

Use this command to display DLDP configuration information or statistics at various monitoring points.

**show dldp** [ **interface** *interface-name* ] [ **statistic** ]

Parameter	Parameter	Description
Description	<i>interface-name</i>	Name of an L3 interface
	<b>statistic</b>	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
-----
V12       Passive  192.168.6.3  192.168.2.2  10        5      3       Up
V13       Passive  192.168.7.3           10        5      3       Up
V14       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 *vlan 2*.

```
Ruijie#show dldp interface vlan2
Interface  Type      Ip          Next-hop    Interval  Retry  Resume  State
-----
V12       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
Vl2	Passive	192.168.6.3	2h34m5s	10	9
Vl4	Passive	192.168.3.3	1d2h3m52s	10	9

The following example displays DLDP statistics at all monitoring points on the Layer 3 interface *vlan 2*.

```
Ruijie#show dldp statistic interface vlan 2
```

Interface	Type	Ip	record-time	Up-count	Down-count
Vl2	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 <i>Up-count</i> and <i>Down-count</i> 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

## 3 VRRP Commands

### 3.1 show vrrp

Use this command to display the VRRP information.

**show vrrp** [ **brief** | *group* ]

Parameter	Parameter	Description
Description	<b>brief</b>	(Optional) Displays the brief of the VRRP group.
	<i>group</i>	Number of the VRRP group to be displayed

**Defaults** N/A

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

The following example displays the brief information of the VRRP group.

```
Ruijie# show vrrp brief
Interface  Grp Pri timer  Own Pre State  Master addr  Group addr
Gi 0/0     1 100 10.82   -   P Backup 192.168.201.213 192.168.201.1
Gi 0/0     2 120 10.59   -   P Master 192.168.201.217 192.168.201.2
```

Related Commands	Command	Description
	<b>vrrp group ip</b> <i>ipaddress</i> [ <b>secondary</b> ]	Enables the VRRP function and set the IP address for the virtual device.

**Platform** N/A

**Description**

## 3.2 show vrrp interface

Use this command to display the information of the VRRP on the interface.

**show vrrp interface** *type number* [ **brief** ]

Parameter Description	Parameter	Description
	<i>type</i>	Interface type
	<i>number</i>	Interface number
	<b>brief</b>	(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
<b>vrrp group ip ip address [ secondary ]</b>	Enables the VRRP function and set the IP address for the virtual device

**Platform  
Description**

N/A

### 3.3 show vrrp packet statistics

Use this command to display the statistics of the VRRP packet transmission.

**show vrrp packet statistics** [ *interface-type interface-number* ]

**Parameter  
Description**

Parameter	Description
<i>interface-type</i>	Interface type and number
<i>interface-number</i>	

**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 statistics of VRRP packet transmission 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	Command	Description
Commands	N/A	N/A

Platform N/A

Description

### 3.4 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	Parameter	Description
Description	<i>group</i>	VRRP group number
	<i>string</i>	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. This command applies to VRRPv2 packets only.

**Configuration Examples** The following example sets the authentication password for VRRP group 1.

```
Ruijie#configure terminal
Ruijie(config)#interface GigabitEthernet 0/0
Ruijie(config-if-GigabitEthernet 0/0)#no switchport //used on the switch.
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 authentication x30dn78k
```

**Platform** N/A

**Description**

### 3.5 vrrp bfd (Global Configuration Mode)

Use this command to enable the global BFD correlation for the IPv4 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	Parameter	Description
Description	<i>interface-type</i>	Interface type and interface number
	<i>interface-number</i>	
	<i>ip-address</i>	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 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** N/A

## Description

### 3.6 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	Parameter	Description
Description	<i>group</i>	VRRP group ID
	<i>ip-address</i>	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

### 3.7 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	Parameter	Description
Description	<b>minimum</b> <i>min-seconds</i>	When the interface is up, VRRP group shall be reloaded after at least min-seconds.
	<b>reload</b> <i>reload-seconds</i>	The reload latency of the VRRP group. If the configured <i>min-seconds</i> is more than <i>reload-seconds</i> , 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 to 60 seconds.

**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.

```
Ruijie#configure terminal
Ruijie(config)#interface GigabitEthernet 0/0
Ruijie(config-if-GigabitEthernet 0/0)#no switchport //used on the switch.
Ruijie(config-if-GigabitEthernet 0/0)#vrrp delay minimum 10 reload 10
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
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 3.8 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 group description text**  
**no vrrp group description**

Parameter	Parameter	Description
Description	<i>group</i>	VRRP group number
	<i>text</i>	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.

```
Ruijie#configure terminal
Ruijie(config)#interface GigabitEthernet 0/0
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 description "Building A -
Marketing and Administration"
```

Related Commands	Command	Description
	<b>vrrp group ip ip-address [ secondary ]</b>	Enables the VRRP function and set the IP address for the virtual device

**Platform Description** N/A

## 3.9 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	Parameter	Description
Description	<i>group</i>	VRRP group number of the virtual device
	<i>ipaddress</i>	IP address of the virtual device
	<b>secondary</b>	Specifies the secondary IP address of the virtual device.

<b>Defaults</b>	This function is disabled by default.
<b>Command Mode</b>	Interface configuration mode
<b>Usage Guide</b>	If the <b>secondary</b> 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 <b>no</b> 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.

```
Ruijie#configure terminal
Ruijie(config)#interface GigabitEthernet 0/0
Ruijie(config-if-GigabitEthernet 0/0)#no switchport //used on the switch.
Ruijie(config-if-GigabitEthernet 0/0)#ip address 10.0.1.1 255.255.255.0
Ruijie(config-if-GigabitEthernet 0/0)#ip address 10.0.2.1 255.255.255.0
secondary
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ip 10.0.1.20
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ip 10.0.2.20 secondary
```

Related Commands	Command	Description
	<b>show vrrp [ brief   group ]</b>	Displays the VRRP configuration.

**Platform Description** N/A

## 3.10 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 group preempt [ delay seconds ]**

**no vrrp group preempt [ delay ]**

Parameter Description	Parameter	Description
	<i>group</i>	VRRP group number
	<b>delay seconds</b>	(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** Interface configuration mode

**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
Ruijie(config-if-GigabitEthernet 0/0)#no switchport //used on the switch.
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
```

**Related  
Commands**

Command	Description
<b>vrrp group ip</b> <i>ipaddress</i> [ <b>secondary</b> ]	Enables the VRRP function and set the IP address for the virtual device.
<b>vrrp group priority</b> <i>level</i>	Sets the VRRP group priority.

**Platform** N/A  
**Description**

### 3.11 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 group priority** *level*  
**no vrrp group priority**

**Parameter  
Description**

Parameter	Description
<i>group</i>	VRRP group number
<i>level</i>	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** Interface configuration mode  
**Mode**

**Usage Guide** N/A

**Configuration** The following example sets the priority of IPv4 VRRP group 1 as 254.

**Examples**

```
Ruijie#configure terminal
Ruijie(config)#interface GigabitEthernet 0/0
Ruijie(config-if-GigabitEthernet 0/0)#no switchport //used on the switch.
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 priority 254
```

Related Commands	Command	Description
	<b>vrrp group ip</b> <i>ipaddress</i> [ <b>secondary</b> ]	Enables the VRRP function and set the IP address for the virtual device.
	<b>vrrp group preempt</b> [ <b>delay seconds</b> ]	Sets the VRRP in the preemption mode.

**Platform** N/A  
**Description**

## 3.12 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 group timers advertise** { *advertise-interval* | **csec** *centisecond-interval* }

**no vrrp group timers advertise**

Parameter	Parameter	Description
Description	<i>group</i>	VRRP group number
	<i>advertise-interval</i>	Sets the interval time in seconds between sending VRRP advertisement.
	<b>csec</b> <i>centisecond-interval</i>	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** Interface configuration mode  
**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.

**Configuration** The following example sets the IPv4 VRRP advertisement interval as 4 seconds.

**Examples**

```
Ruijie#configure terminal
Ruijie(config)#interface GigabitEthernet 0/0
Ruijie(config-if-GigabitEthernet 0/0)#no switchport //used on the switch.
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 timers advertise 4
```

The following example sets the IPv4 VRRP advertisement interval as 50 centi-seconds.

```
Ruijie#configure terminal
Ruijie(config)#interface GigabitEthernet 0/0
Ruijie(config-if-GigabitEthernet 0/0)#no switchport //used on the switch.
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 timers advertise csec 50
```

**Related  
Commands**

Command	Description
<b>vrrp group ip</b> <i>ipaddress</i> [ <b>secondary</b> ]	Enables the VRRP function and set the IP address for the virtual device.
<b>vrrp group timers learn</b>	Enables the timer learning function.

**Platform** N/A  
**Description**

### 3.13 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 group timers learn**

**no vrrp group timers learn**

Parameter	Parameter	Description
<b>Description</b>	<i>group</i>	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** The following example enables the timer learning function on the IPv4 VRRP group 1.

**Examples**

```
Ruijie#configure terminal
Ruijie(config)#interface GigabitEthernet 0/0
Ruijie(config-if-GigabitEthernet 0/0)#no switchport //used on the switch.
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 timers learn
```

**Related  
Commands**

Command	Description
<b>vrrp group ip</b> <i>ipaddress</i> [ <b>secondary</b> ]	Enables the VRRP function and set the IP address for the virtual device.
<b>vrrp group timers advertise</b> <i>interval</i>	Sets the IPv4 VRRP advertising interval.

**Platform** N/A  
**Description**

## 3.14 vrrp track

Use these commands to enable the IPv4 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-address* } [ *priority* ]

Use these commands to enable VRRP IPv4 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* ]

**no vrrp group track** *ipv4-address*

Use this command to disable the specified neighbor IP address track via BFD.

**no vrrp group track bfd** *interface-type interface-number ipv4-address*

**Parameter  
Description**





Parameter	Description
<i>group</i>	VRRP group number
<i>interface-type</i> <i>interface-number</i>	Type of monitored interface
<b>bfd</b> <i>interface-type</i> <i>interface-number ipv4-address</i>	Enables the specified neighbor IP address track via BFD.
<i>priority</i>	VRRP priority change range when the interface or ip address

	reachability status changes. If this parameter is not selected, the default value is 10.
<i>ipv4-address</i>	Monitored IPv4 address. With BFD configured, it refers to the neighbor IP address.
<b>interval</b> <i>interval-value</i>	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 3 seconds.
<b>timeout</b> <i>timeout-value</i>	The timeout time of the unreachable monitored ip address. If this parameter is not selected, the default value is 1 seconds.
<b>retry</b> <i>retry-value</i>	Track retries. If the value is reached, the link is thought unreachable. If this parameter is not configured, the default value is 3.

**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).
-  If a host is monitored, specify the IPv4 address for the IPv4 VRRP router.
-  If the host IP address is link-local, an interface must be specified.
-  If a VRRP router owns the IP address of the physical interface, the priority is 255. Keep the priority when the monitored IP address or interface is set.

**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.

```
Ruijie#configure terminal
Ruijie(config)#interface GigabitEthernet 0/0
Ruijie(config-if-GigabitEthernet 0/0)#no switchport //used on the switch.
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 priority 254
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 track GigabitEthernet 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
	<b>vrrp group ip</b> <i>ipaddress</i> [ <b>secondary</b> ]	Enables the VRRP function and set the IP address for the virtual device.
	<b>vrrp group priority</b> <i>level</i>	Sets the VRRP group priority.

**Platform** N/A

**Description**

### 3.15 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
	<b>2</b>	Uses the VRRPv2 version to send the packets.
	<b>3</b>	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** The following example configures the version of sending the IPv4 VRRP packets on the interface  
**Examples** gi0/0.

```
Ruijie#configure terminal
Ruijie(config)#interface GigabitEthernet 0/0
Ruijie(config-if-GigabitEthernet 0/0)#no switchport //used on the switch.
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 version 3
```

**Related  
Commands**

Command	Description
<b>vrrp group ip</b> <i>ipaddress</i> [ <b>secondary</b> ]	Enables the VRRP function and set the IP address for the virtual device.
<b>vrrp group timers advertise</b> <i>interval</i>	Sets the interval of sending the VRRP advertisement.

**Platform** N/A  
**Description**

## 4 VRRP Plus Commands

### 4.1 show vrrp balance

Use this command to display the VRRP Plus brief or details.

**show vrrp balance** [ **brief** | **group** ]

Parameter Description	Parameter	Description
	<b>brief</b>	(Optional) Displays the VRRP Plus brief.
	<b>group</b>	(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
	<b>vrrp group balance</b>	Enables the VRRP Plus function.
	<b>vrrp group load-balancing</b> { <b>host-dependent</b>   <b>round-robin</b>   <b>weighted</b> }	Sets the load balancing policy of the VRRP Plus.
	<b>show vrrp balance interface</b> <i>type number</i> [ <b>brief</b> ]	Displays the VRRP Plus running status of the specified interface.

**Platform** N/A

**Description**

## 4.2 show vrrp balance interface

Use this command to display the actions of the VRRP Plus group on the specified interface.

**show vrrp balance interface** *type number* [ **brief** ]

Parameter Description	Parameter	Description
	<b>interface</b> <i>type number</i>	Specifies the interface type and number.
	<b>brief</b>	(Optional) Displays the brief information.

**Defaults** N/A

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

**Usage Guide** N/A

**Configuration** The following example displays the actions of the VRRP Plus on FastEthernet 0/0.

**Examples**

```
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
<b>vrrp group balance</b>	Enables the VRRP Plus function.
<b>vrrp group load-balancing</b> { <b>host-dependent</b>   <b>round-robin</b>   <b>weighted</b> }	Sets the load balancing policy of the VRRP Plus.
<b>show vrrp balance interface</b> <i>type number</i> [ <b>brief</b> ]	Displays the VRRP Plus running status of the specified interface.

**Platform** N/A**Description**

## 4.3 vrrp balance

Use this command to enable the VRRP Plus function.

Use the **no** form of this command to disable this function.

**vrrp group balance**

**no vrrp] group balance**

**Parameter  
Description**

Parameter	Description
<i>group</i>	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** To enable VRRP Plus, you must configure the VRRP group first.**Configuration Examples** The following example enables the VRRP Plus function on the Layer 3 interface GigabitEthernet0/0.

```
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
---------	-------------

<b>vrrp load-balancing</b>	Sets the load balancing policy of the VRRP Plus.
<b>show vrrp balance</b>	Displays the VRRP Plus running status.
<b>show vrrp balance interface</b>	Displays the VRRP Plus running status of the specified interface.

**Platform** N/A

**Description**

## 4.4 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 group forwarder preempt**

**no vrrp group forwarder preempt**

**Parameter  
Description**

Parameter	Description
<i>group</i>	VRRP group number. The range is from 1 to 255.

**Defaults** By default, forwarding preemption is enabled.

**Command  
Mode** Interface configuration mode

**Usage Guide** N/A

**Configuration  
Examples** The following example enables the forwarding preemption function of the VRRP Plus backup group on the Layer3 interface GigabitEthernet 0/0.

```
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
<b>vrrp group balance</b>	Enables the VRRP Plus function.
<b>show vrrp balance [ brief   group ]</b>	Displays the VRRP Plus running status.
<b>show vrrp balance interface type number [ brief ]</b>	Displays the VRRP Plus running status of the specified interface.



**Platform** N/A

**Description**

## 4.5 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 group load-balancing { host-dependent | round-robin | weighted**

**no vrrp group load-balancing { host-dependent | round-robin | weighted }**

**Parameter  
Description**

Parameter	Description
<i>group</i>	Specifies the VRRP group ID.
<b>host-dependent</b>	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.
<b>round-robin</b>	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.
<b>weighted</b>	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** N/A

**Configuration  
Examples** The following example sets the load balancing policy of the VRRP Plus group1 on Layer 3 interface GigabitEthernet0/0 as host-dependent.

```
Ruijie# config t
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 load-balancing host-dependent
Ruijie(config-if-TenGigabitEthernet 0/2)# vrrp ipv6 1 load-balancing
host-dependent
```

**Related  
Commands**

Command	Description
<b>vrrp group balance</b>	Enables the VRRP Plus function.
<b>show vrrp balance [ brief   group ]</b>	Displays the VRRP Plus running status.
<b>show vrrp balance interface type number [ brief ]</b>	Displays the VRRP Plus running status of the

	specified interface.
--	----------------------

**Platform** N/A

**Description**

## 4.6 vrrp plus enable

Use this command to enable the VRRP Plus function globally.

Use the **no** form of this command to disable the VRRP Plus function.

**vrrp plus enable**

**no vrrp plus enable**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** The global VRRP Plus function is enabled by default.

**Command Mode** Global configuration mode

**Usage Guide** This command is supported only on an N18000 device with the CB line card installed. By default, VRRP Plus is enabled globally, and the VRRP backup group ID ranges from 1 to 2. If VRRP backup groups with group IDs set to 3 to 7 are configured before, these groups will be deleted.

If **no vrrp plus enable** is configured, VRRP Plus is disabled, existing VRRP plus configurations will be deleted, and the supported ID of the VRRP backup group ranges from 1 to 7.

**Configuration** The following example enables VRRP Plus globally.

**Examples**

```
Ruijie#configure terminal
Ruijie(config)#vrrp plus enable
```

The following example disables VRRP Plus globally.

```
Ruijie#configure terminal
Ruijie(config)# no vrrp plus enable
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 4.7 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 group timers redirect** *redirect timeout*

**no vrrp group timers redirect**

### Parameter Description

Parameter	Description
<i>group</i>	VRRP Plus backup group ID, in the range of 1 to 255.
<i>redirect</i>	The redirection time, 300 seconds (namely 5 minutes) by default, in the range of 0 to 3,600.
<i>timeout</i>	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
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 timers redirect 300 6000
```

### Related Commands

Command	Description
<b>vrrp group balance</b>	Enables the VRRP Plus function.
<b>show vrrp balance</b> [ <b>brief</b>   <i>group</i> ]	Displays the VRRP Plus running status.
<b>show vrrp balance interface</b> <i>type number</i> [ <b>brief</b> ]	Displays the VRRP Plus running status of the specified interface.

### Platform Description

N/A

## 4.8 vrrp weighting

Use this command to set the weight and threshold of the VRRP Plus backup group.

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

**vrrp group weighting** *maximum* [ **lower** *lower* ] [ **upper** *upper* ]

**no vrrp group weighting**

### Parameter Description

Parameter	Description
<i>group</i>	VRRP Plus backup group ID, in the range of 1 to 255.
<i>maximum</i>	Weight, 100 by default, in the range of 2 to 254.
<i>lower</i>	Weight lower, 1 by default, in the range of 1 to (maximum-1)
<i>upper</i>	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

The following example sets the weight and threshold of the VRRP Plus group1.

### Examples

```
Ruijie#config t
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 weighting 50 lower 30 upper 50
```

### Related Commands

Command	Description
<b>vrrp group balance</b>	Enables the VRRP Plus function.
<b>show vrrp balance</b> [ <b>brief</b>   <i>group</i> ]	Displays the VRRP Plus running status.
show vrrp balance interface <i>type number</i> [ <b>brief</b> ]	Displays the VRRP Plus running status of the specified interface.

### Platform

N/A

### Description

## 4.9 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
	<b>ipv6</b>	Applies to IPv6.
	<i>group</i>	VRRP Plus backup group ID, in the range of 1 to 255.
	<i>object-number</i>	The ID of the track object created by the track module, in the range of 1 to 700.
	<i>value</i>	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 t
Ruijie(config)#track 1 interface GigabitEthernet 0/14 line-protocol
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 weighting track 1 decrement 50
```

The following example sets the track object corresponding to the weight of the IPv6 VRRP Plus backup group 1.

```
Ruijie#config
Ruijie(config)#track 1 interface GigabitEthernet 0/14 line-protocol
Ruijie(config)#interface GigabitEthernet 0/0
Ruijie(config-if-GigabitEthernet 0/2)#ipv6 address 2000::1/64
Ruijie(config-if-GigabitEthernet 0/2)#vrrp 1 ipv6 fe80::8
Ruijie(config-if-GigabitEthernet 0/2)#vrrp 1 ipv6 2000::8
Ruijie(config-if-GigabitEthernet 0/2)#vrrp ipv6 1 balance
Ruijie(config-if-GigabitEthernet 0/0)# vrrp ipv6 1 weighting track 1 decrement 50
```

Related Commands	Command	Description
	<b>vrrp</b> <i>group</i> <b>balance</b>	Enables the VRRP Plus function.
	<b>show vrrp balance</b> [ <b>brief</b>   <i>group</i> ]	Displays the VRRP Plus running status.
	<b>show vrrp balance interface</b> <i>type number</i> [ <b>brief</b> ]	Displays the VRRP Plus running status of the specified interface.

**Platform** N/A

**Description**

## 5 BFD Commands

### 5.1 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
	<b>interval</b> <i>milliseconds</i>	Interval of sending the BFD control messages to the BFD session neighbor. <i>milliseconds</i> : The range is from 10 to 10,000 ms.
	<b>min_rx</b> <i>milliseconds</i>	Expected interval of receiving the BFD control messages from the BFD session neighbor. <i>milliseconds</i> : The range is from 10 to 10,000 ms.
	<b>multiplier</b> <i>multiplier-value</i>	Count of BFD control message not received from the peer in the configured interval. <i>multiplier-value</i> : 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.  
BFD session parameters should be consistent on peers, so that associated protocols will take effect at the same time. If not, one-way forwarding will occur.  
Set the parameters based on interface bandwidth. If **interval** and **min\_rx** are too short, BFD sessions may occupy much bandwidth and influence data transmission.

**Configuration Examples** The following example configures the BFD session parameters 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** N/A

**Description**

## 5.2 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
<b>peer-ip</b> <i>ip-address</i>	The peer IP address to be detected, which must be directly connected to the Layer 3 interface.
<b>source-ip</b> <i>ip-address</i>	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.
<b>process-pst</b>	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 Layer 3 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** N/A

**Description**



## 5.3 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

## 5.4 bfd echo

Use this command to enable echo mode.

Use the **no** form of this command to disable echo mode.

**bfd echo**

**no bfd echo**

Parameter Description	Parameter	Description

N/A

N/A

**Defaults** This function is disabled by default.

**Command** Interface configuration mode  
**Mode**

**Usage Guide** This command cannot be configured on the AP ports.

By default, with BFD session parameter configured, the system enables the echo mode automatically. 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, 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.

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** The following example enables the echo mode on the routed port FastEthernet 0/2:

**Examples**

```
Ruijie(config)# interface fastEthernet 0/2
Ruijie(config)# no switchport
Ruijie(config-if)# bfd echo
```

**Related  
Commands**

Command	Description
<b>bfd</b>	Configures the BFD session parameter.
<b>bfd slow-timer</b>	Configures the slow-timer time.

**Platform** N/A  
**Description**

## 5.5bfd 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**

<b>Parameter Description</b>	Parameter	Description
	<i>milliseconds</i>	BFD slow-timer time. The range is from 1,000 to 30,000. The unit is millisecond.
<b>Defaults</b>	The default slow-timer is 3,000 milliseconds.	
<b>Command Mode</b>	Global configuration mode	
<b>Usage Guide</b>	N/A	
<b>Configuration Examples</b>	The following example sets the slow-timer to 14,000 milliseconds. <pre>Ruijie(config)# bfd slow-timer 14000</pre>	
<b>Related Commands</b>	Command	Description
	<b>bfd echo</b>	Enables the BFD echo function
<b>Platform Description</b>	N/A	

## 5.6 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 bfd up-dampening**

<b>Parameter Description</b>	Parameter	Description
	<i>milliseconds</i>	(Optional) Sets the BFD up-dampening time. The range is from 0 to 300,000. The unit is millisecond.
<b>Defaults</b>	The default is 0 millisecond, which means that the notification is sent to the related application once the session state is UP.	
<b>Command Mode</b>	Interface configuration mode	
<b>Usage Guide</b>	N/A	
<b>Configuration Examples</b>	The following example sets the BFD up-dampening time to 60,000 milliseconds. <pre>Ruijie(config)# bfd up-dampening 60000</pre>	

Related Commands	Command	Description
	<b>bfd</b>	Configures the BFD session parameter.

**Platform** N/A

**Description**

## 5.7 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** | **pst** } ] [ **ipv4** *ip-address* | **ipv6** *ip-address* ] [ **details** ]

Parameter Description	Parameter	Description
	<b>vrf</b> <i>vrf-name</i>	(Optional) sets the neighbor VRF name.
	<b>client</b>	(Optional) specifies the routing protocol.
	<b>ap</b>	Displays the BFD session configuration for Layer 3 aggregate ports.
	<b>bgp</b>	Displays the BFD session configuration for BGP.
	<b>isis</b>	Displays the BFD session configuration for ISIS.
	<b>ospf</b>	Displays the BFD session configuration for OSPF.
	<b>ospfv3</b>	Displays the BFD session configuration for OSPFv3.
	<b>rip</b>	Displays the BFD session configuration for RIP.
	<b>vrrp</b>	Displays the BFD session configuration for VRRP.
	<b>static-route</b>	Displays the BFD session configuration for the static route.
	<b>pbr</b>	Displays the BFD session configuration for PBR.
	<b>vrrp-balance</b>	Displays the BFD session configuration for the VRPP.
	<b>pst</b>	Displays the BFD session configuration and the Layer3 interface status.
	<b>ipv4</b> <i>ip-address</i>	(Optional) Displays the session information of the specified IPv4 neighbor.
	<b>ipv6</b> <i>ip-address</i>	(Optional) Displays the session information of the specified IPv6 neighbor.
	<b>details</b>	(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** The following example displays the BFD session configuration.

**Examples**

```
Ruijie# sh bfd neighbors
IPV4 sessions: 1, UP: 1
IPV6 sessions: 0, UP: 0
OurAddr      NeighAddr    LD/RD      RH Holddown(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    Holddown(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
Multiplier   : 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 Layer 3 aggregate ports.

```
Ruijie#show bfd neighbors client ap
IPV4 sessions: 1, UP: 0
IPV6 sessions: 0, UP: 0
OurAddr      NeighAddr    LD/RD      RH/RS    Holddown(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

<b>Platform</b>	N/A
<b>Description</b>	

## 6 IP Event Dampening Commands

### 6.1 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
	<i>half-life-period</i>	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.
	<i>reuse-threshold</i>	Configures the penalty threshold to unsuppress the interface. The range is from 1 to 20,000. The default value is 1,000.
	<i>suppress-threshold</i>	Configures the penalty threshold to suppress the interface. The range is from 1 to 20,000. The default value is 2,000.
	<i>max-suppress</i>	Configures the maximum suppress time. The range is from 1 to 255. The default value is 4 times of the <i>half-life-period</i> .
	<b>restart</b>	Activates the restart penalty.
	<i>restart-penalty</i>	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 transceive 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.

**Configuration** The following example configures the IP event dampening function.

**Examples**

```
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
<b>clear counters</b>	Clears the interface counters.
<b>show dampening interface</b>	Displays the statistics of the dampening interface.
<b>show interfaces dampening</b>	Displays details of the dampening interface.

**Platform** N/A

**Description**

## 6.2 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
	<b>dampening</b>	Enables the IP event dampening function on the interface.
	<b>clear counters</b>	Clears the interface counters.
	<b>show interfaces dampening</b>	Displays details of IP event dampening configuration.

**Platform** N/A

**Description**

## 6.3 show interfaces dampening

Use this command to display the details of IP event dampening configuration.

**show interfaces** [ *interface-id* ] **dampening**

Parameter Description	Parameter	Description
	<i>interface-id</i>	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** The following example shows the details of IP event dampening configuration.

**Examples**

```
Ruijie# show interfaces 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
<b>dampening</b>	Enables the IP event dampening function.
<b>clear counters</b>	Clears the interface counters.
<b>show dampening interface</b>	Displays statistics of the dampening interface.

**Platform  
Description**

N/A

## 7 VSU Commands

### 7.1 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	Parameter	Description
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-AggregatePort 1)#dad relay enable
```

The following example disables the AP-based DAD relay function.

```
Ruijie(config)#interface aggregateport 1
Ruijie(config-if-AggregatePort 1)#no dad relay enable
Ruijie(config-if-AggregatePort 1)#exit
```

Related Commands	Command	Description
	<b>dual-active detection</b>	Configures DAD.
	<b>dual-active pair interface</b>	Configures a pair of Bidirectional Forwarding Detection (BFD)-based DAD interfaces.
	<b>dual-active exclude interface</b>	Configures an exclude interface of DAD.
	<b>show switch virtual dual-active</b>	Displays the configuration and status of DAD.

**Platform** N/A

**Description**

### 7.2 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	Parameter	Description
Description	<i>interface-name</i>	Interface name

**Defaults** N/A

**Command Mode** config-vs-domain configuration mode

**Usage Guide** The BFD port must be a routing port on the peer end.

**Configuration Examples** The following examples configures interface Gi 1/1/1 as a BFD port.

```
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** N/A  
**Description**

## 7.3 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	Parameter	Description
Description	<b>bfd</b>	BFD-based DAD
	<b>aggregateport</b>	AP-based DAD

**Defaults** This function is disabled by default.

**Command Mode** config-vs-domain configuration mode

**Usage Guide** Configure this command only in virtual switch unit (VSU) mode.

**Configuration** The following example enables BFD-based DAD.

**Examples**

```
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
<b>dual-active pair interface</b>	Configures a DAD interface.
<b>dual-active exclude interface</b>	Configures an exclude interface of DAD.
<b>show switch virtual dual-active</b>	Displays the configuration and status of DAD.

**Platform** N/A  
**Description**

## 7.4 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	Parameter	Description
<b>Description</b>	<i>interface-name</i>	Interface name

**Defaults** N/A

**Command Mode** config-vs-domain configuration mode

**Usage Guide** Configure this command only in VSU mode.  
An exclude interface must be a routing interface instead of a virtual switch link (VSL) interface.  
Multiple exclude interfaces are supported.

**Configuration** The following example configures interface Gi 1/1/3 as an exclude interface of DAD.

**Examples**

```
Ruijie(config)# interface GigabitEthernet 1/0/3
Ruijie(config-if- GigabitEthernet 1/0/3)# no switchport
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# dual-active exclude interface GigabitEthernet
1/0/3
```

**Related  
Commands**

Command	Description
<b>dual-active detection</b>	Configures DAD.
<b>dual-active pair interface</b>	Configures a DAD interface.
<b>show switch virtual dual-active</b>	Displays the configuration and status of DAD.

**Platform**

N/A

**Description**

## 7.5 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*

**no dual-active interface**

**Parameter  
Description**

Parameter	Description
<i>interface-name</i>	Interface type and interface number. An AP-based DAD interface must be specified.

**Defaults**

N/A

**Command Mode**

config-vs-domain configuration 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.

**Configuration  
Examples**

The following example configures AP 1 as the AP-based detection interface.

```
Ruijie(config)# interface aggregateport 1
Ruijie(config-if-AggregatePort 1)#exit
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# dual-active interface aggregateport 1
```

**Related  
Commands**

Command	Description
<b>dual-active detection</b>	Configures BFD-/AP-based DAD.
<b>show switch virtual dual-active</b>	Displays the configuration and status of DAD.

**Platform** N/A

**Description**

## 7.6 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** *interface-name* [ **copper** | **fiber** ]

**no port-member interface** *interface-name*

Parameter	Parameter	Description
Description	<i>interface-name</i>	Interface name, for example, GigabitEthernet 0/1 and GigabitEthernet 0/3.
	<b>copper</b>	Copper port
	<b>fiber</b>	Fiber port

**Defaults** N/A

**Command Mode** config-vsl-port configuration 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 1/0/1
Ruijie(config-vsl-port)# no port-member interface GigabitEthernet 1/0/1
```

Related	Command	Description
Commands	N/A	N/A

**Platform** N/A  
**Description**

## 7.7 session

Use this command to perform redirection to a host or a device console.

**session** { **device** *switch\_id* | **master** }

<b>Parameter</b> <b>Description</b>	Parameter	Description
	<b>device</b>	Redirects to the member device console.
	<i>switch_id</i>	Member device number, varying with products
	<b>master</b>	Redirects to the host console.
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Privileged EXEC mode	
<b>Usage Guide</b>	This command takes effect in VSU mode.	
<b>Configuration</b> <b>Examples</b>	The following example redirects the serial port console of standby device 2 to the master device console.	
	<pre>Ruijie-STANDBY#session master Ruijie#exit Ruijie-STANDBY#</pre>	
	The following example redirects the master device console to the console of standby device 2 and exits.	
	<pre>Ruijie#session device 2 Ruijie-STANDBY#exit Ruijie#</pre>	
<b>Related</b> <b>Commands</b>	Command	Description
	N/A	N/A
<b>Platform</b> <b>Description</b>	N/A	

## 7.8 show switch id

Use this command to display the device ID.

**show switch id**

<b>Parameter</b> <b>Description</b>	Parameter	Description
	N/A	N/A
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Privileged EXEC mode	
<b>Usage Guide</b>	N/A	
<b>Configuration</b>	The following example displays the device ID in the standalone mode.	



**Examples**

```
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
<b>show switch virtual</b>	Displays the domain ID as well as the ID and role of each chassis.

**Platform**

N/A

**Description**

## 7.9 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**

Command	Description
---------	-------------

Commands	<b>switch</b>	Modifies the device ID in standalone mode.
	<b>switch priority</b>	Configures the device priority.
	<b>switch renumber</b>	Modifies the device ID in VSU mode.
	<b>switch domain</b>	Modifies the domain ID of a device in VSU mode.
	<b>switch virtual domain</b>	Modifies the domain ID of a device in standalone mode.

Platform  
Description

N/A

## 7.10 show switch virtual balance

Use this command to display the load balance configuration in VSU mode.

**show switch virtual balance**

Parameter	Parameter	Description
Description	N/A	N/A

Defaults

N/A

Command Mode

Privileged EXEC mode

Usage Guide

N/A

Configuration

The following example displays the load balance configuration of the device in VSU mode.

Examples

```
Ruijie#show switch virtual balance
Aggregate port LFF: enable
```

Related Commands	Command	Description
	<b>show switch virtual</b>	Displays the domain ID as well as the ID and role of the device.

Platform  
Description

N/A

## 7.11 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	Parameter	Description
Description	<i>switch_id</i>	Displays the VSU configuration of the specified device.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the VSU configuration of the device in standalone mode.

**Examples**

```
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
!
```

The following example displays the VSU configuration of the device 1 in VSU mode.

```
Ruijie#show switch virtual config 1
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
!
```

**Related  
Commands**

Command	Description
<b>show switch virtual</b>	Displays the domain ID as well as the ID and role of each chassis.

**Platform  
Description**

N/A

## 7.12 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
<b>bfd</b>	Configuration of BFD-based DAD
<b>aggregateport</b>	Configuration of AP-based DAD
<b>summary</b>	Configuration and status of DAD

**Defaults**

N/A

**Command Mode**

Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the configuration and status of DAD.

**Examples**

```
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 1/0/3
GigabitEthernet 1/0/4
In 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 configured:
    GigabitEthernet 1/0/1: UP
    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
<b>dual-active detection</b>	Enables DAD.
<b>dual-active pair interface</b>	Configures a DAD interface.
<b>dual-active exclude interface</b>	Configures an exclude interface.

**Platform  
Description**

N/A

## 7.13 show switch virtual link

Use this command to display the status of a virtual switch link (VSL).

**show switch virtual link [ port ]**

**Parameter**

Parameter	Description
-----------	-------------

<b>Description</b>	<b>port</b>	Displays the port status of a VSL.
--------------------	-------------	------------------------------------

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays VSL link information.

**Examples**

```
Ruijie# show switch virtual link
VSL-AP  State  Peer-VSL      Rx      Tx      Uptime
-----
1/1      UP      2/1           100000  100000  1d,4h,29m
2/1      UP      1/1           100000  100000  1d,4h,29m
```

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
```

**Related  
Commands**

Command	Description
<b>show switch virtual</b>	Displays information about the VSU system.
<b>show switch virtual role</b>	Displays the ID, role, and priority of each device.

**Platform  
Description** N/A

## 7.14 show switch virtual role

Use this command to display the ID, role, and priority of each chassis.

**show switch virtual role**

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 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
	<b>switch priority</b>	Configures the priority of a device in the VSU system.
	<b>switch virtual domain</b>	Modifies the domain ID of a device in standalone mode.
	<b>show switch virtual link</b>	Displays VSL information.

**Platform  
Description** N/A

## 7.15 show switch virtual topology

Use this command to display the VSU topology connection status.

**show switch virtual topology**

Parameter	Parameter	Description
-----------	-----------	-------------

Description	N/A	N/A						
Defaults	N/A							
Command Mode	Privileged EXEC mode							
Usage Guide	N/A							
Configuration Examples	<p>The following example displays the topology status.</p> <pre>Ruijie# show switch virtual topology</pre> <p>Introduction: '[num]' means switch num, '(num/num)' means vsl-aggregateport num.</p> <p>Chain Topology:</p> <pre>[1] (1/2) --- (2/1) [2]</pre> <p>Switch[1]: ACTIVE, MAC: 00d0.f822.33d6, Description: Switch1</p> <p>Switch[2]: STANDBY, MAC: 1234.5678.9003, Description: Switch2</p> <p>Field Description</p> <table><tr><th>Field</th><th>Description</th></tr><tr><td>Ring Topology</td><td>Topology type.</td></tr><tr><td>Switch[-]</td><td>Device description.</td></tr></table>		Field	Description	Ring Topology	Topology type.	Switch[-]	Device description.
Field	Description							
Ring Topology	Topology type.							
Switch[-]	Device description.							
Related Commands	<table><tr><th>Command</th><th>Description</th></tr><tr><td>N/A</td><td>N/A</td></tr></table>	Command	Description	N/A	N/A			
Command	Description							
N/A	N/A							
Platform Description	N/A							




## 7.16 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**

<b>Parameter Description</b>	<table><thead><tr><th>Parameter</th><th>Description</th></tr></thead><tbody><tr><td><i>switch_id</i></td><td>ID of a device in the VSU system</td></tr><tr><td colspan="2"> The range depends on products.</td></tr></tbody></table>	Parameter	Description	<i>switch_id</i>	ID of a device in the VSU system	 The range depends on products.	
Parameter	Description						
<i>switch_id</i>	ID of a device in the VSU system						
 The range depends on products.							
<b>Defaults</b>	The default is 1.						
<b>Command Mode</b>	config-vs-domain configuration 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
Ruijie(config-vs-domain)# exit
```

**Related  
Commands**

Command	Description
<b>switch virtual domain</b>	Modifies the domain ID of a device in standalone mode.
<b>switch priority</b>	Configures the priority of a device in the VSU system.
<b>show switch virtual</b>	Displays the domain ID as well as the ID and role of each chassis.

**Platform** N/A

**Description**

## 7.17 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
<b>virtual</b>	VSU mode
<b>standalone</b>	Standalone mode
<i>switch_id</i>	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 converts the device mode from the standalone mode into the VSU mode.

```
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 Commands

Command	Description
<b>switch</b>	Modify the device ID in standalone mode.
<b>switch virtual domain</b>	Modify the domain ID of a device in standalone mode.
<b>switch priority</b>	Configure the priority of a device in the VSU system.
<b>show switch virtual</b>	Display the domain ID as well as the ID and role of each chassis.

#### Platform Description

N/A

## 7.18 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
<i>error_num</i>	Limits the number of error frames increasing from that in the last detection. If the increased number is greater than <i>error_num</i> , it is taken as an error.
<i>time_num</i>	When the error count exceeds the <i>time_num</i> , 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 configuration mode

**Usage Guide** N/A

**Configuration** The following example sets the *error\_time* and *time\_num* parameters to 10 and 5 respectively.

**Examples**

```
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

## 7.19 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
<i>switch_id</i>	Device ID
<i>dev_name</i>	Device description, no greater than 32 characters.

**Defaults**

N/A

**Command Mode**

config-vs-domain configuration mode

**Usage Guide**

This command is configured on a device in whether standalone or VSU mode and takes effect immediately after configuration,

**Configuration**

**Examples**

```
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


## 7.20 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	Parameter	Description
Description	<i>switch_id</i>	ID of the running device in VSU mode.   The range depends on products. For details, see the <i>Configuration Guide</i> .
	<i>new_domain_id</i>	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 configuration 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)# switch virtual domain 1
Ruijie(config-vs-domain)# switch 1 domain 10
```

The following example sets the domain ID of device 2 to 10 in VSU mode.

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# switch 2 domain 10
```

The following example sets the domain ID of device 2 to the default value in VSU mode.

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# no switch 2 domain
```

Related	Command	Description
Commands	<b>switch virtual domain</b>	Modifies the domain ID in standalone mode.
	<b>show switch virtual</b>	Displays the domain ID as well as the ID and role of each chassis.

**Platform**  
**Description** N/A

## 7.21 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
<i>switch_id</i>	ID of a device in the VSU system.   The range depends on products. For details, see the <i>Configuration Guide</i> .
<i>priority_num</i>	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 configuration 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.

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
Ruijie(config-vs-domain)# no switch 2 priority
Ruijie(config-vs-domain)# exit
```

**Related  
Commands**

Command	Description
<b>switch</b>	Modifies the device ID in standalone mode.
<b>show switch virtual</b>	Displays the domain ID as well as the ID and role of each chassis.

**Platform****Description**

N/A

## 7.22 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*

**no switch** *switch\_id*

**Parameter**  
**Description**

Parameter	Description
<i>switch_id</i>	ID of the running device in VSU mode   The range depends on products. For details, see the <i>Configuration Guide</i> .
<i>new_switch_id</i>	ID of the new switch   The range depends on products. For details, see the <i>Configuration Guide</i> .

**Defaults** N/A

**Command Mode** config-vs-domain configuration mode

**Usage Guide** This command is configured in VSU mode. In addition and takes affect after device restart.  
The **no** form of this command will restore the switch ID to 1.

**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
```

**Related**  
**Commands**

Command	Description
<b>switch</b>	Modifies the device ID in standalone mode.
<b>show switch virtual</b>	Displays the domain ID as well as the ID and role of each chassis.

**Platform**  
**Description** N/A

## 7.23 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	Parameter	Description
Description	N/A	N/A
Defaults	This function is enabled by default.	
Command Mode	config-vs-domain configuration mode	
Usage Guide	N/A	
Configuration Examples	The following example enables the locally-preferred forwarding function on the AP in VSU mode. <pre>Ruijie(config)# switch virtual domain 1 Ruijie(config-vs-domain)# switch virtual aggregateport lff enable</pre>	
Related Commands	Command	Description
	show switch virtual balance	Displays the current traffic balancing mode.
Platform Description	N/A	

## 7.24 switch virtual domain

Use this command to modify the domain ID of a device in standalone mode, or enter config-vs-domain configuration mode in VSU mode.

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

**switch virtual domain** *domain\_id*

**no switch virtual domain**

Parameter	Parameter	Description
Description	domain_id	Domain ID of the VSU, in the range from 1 to 255.
Defaults	The default is 100.	
Command Mode	config-vs-domain 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 in standalone mode. <pre>Ruijie(config)# switch virtual domain 1 Ruijie(config-vs-domain)#</pre>	
Related Commands	Command	Description
Commands	show switch virtual	Displays the domain ID as well as the ID and role of each chassis.

<b>switch domain</b>	Modifies the domain ID in VSU mode.
----------------------	-------------------------------------

**Platform**  
**Description**

N/A

## 7.25 switch virtual ecmp lff enable

Use this command to enable the locally-preferred forwarding function on the ECMP interface in VSU mode.

Use the **no** form of this command to disable this function.

**switch virtual ecmp lff enable**

**no switch virtual ecmp lff enable**

<b>Parameter</b>	<b>Parameter</b>	<b>Description</b>
<b>Description</b>	N/A	N/A

**Defaults** This function is enabled by default.

**Command Mode** config-vs-domain configuration 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
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show switch virtual balance</b>	Displays the current load balance mode.

**Platform**  
**Description**

N/A

## 7.26 vsl-port

Use this command to enter VSL-PORT mode

**vsl-port**

<b>Parameter</b>	<b>Parameter</b>	<b>Description</b>
<b>Description</b>	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-APPORT 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 RNS &Track Commands

### 8.1 delay

Use this command to specify a period of time after which the tracked object status will change if the interface status changes.

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

**delay** { **up** *seconds* [ **down** *seconds* ] | [ **up** *seconds* ] **down** *seconds* }

**no delay**

#### Parameter Description

Parameter	Description
<b>up</b> <i>seconds</i>	Sets the delay time from down to up in the range from 0 to 180. The unit is second.
<b>down</b> <i>seconds</i>	Sets the delay time from up to down in the range from 0 to 180. 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

## 8.2 dns

Use this command to set an IP RNS object to send the DNS packets and to enter the IP RNS DNS mode.

**dns** *destination-hostname* **name-server** *ip-address*

Parameter Description	Parameter	Description
	<i>destination-hostname</i>	Sets the destination IP address or the destination host domain name.
	<i>ip-address</i>	Indicates the source IP address of RNS packets.

**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** The following example sets the IP RMS object to send the DNS packets.

**Examples**

```
Ruijie(config)# ip rns 1
Ruijie(config-ip-rns)# dns www.ruijie.com.cn name-server 61.154.22.41
Ruijie(config-ip-rns-dns)# exit
Ruijie(config)# ip rns schedule 1 start-time now
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 8.3 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

<i>milliseconds</i>	Sets the interval of sending the packets, in the range from 10 to 604,800,000 in the unit of milliseconds.
---------------------	--

**Defaults** The default is 60 seconds.

**Command** IP RNS ICMP echo configuration mode

**Mode** IP RNS DNS configuration mode

**Usage Guide** Use this command to set the interval of sending the ICMP echo or DNS packets, which must accord with the following formula to ensure accuracy:

**frequency milliseconds > timeout milliseconds >= threshold milliseconds**

**Configuration** The following example configures an ICMP echo probe whose destination address is 192.168.21.1.

**Examples** The frequency, timeout time and threshold are set to 30,000, 8,000 and 6,000 milliseconds respectively.

```
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
<b>timeout</b>	Defines the timeout time of sending the packets.

**Platform** N/A

**Description**

## 8.4 icmp-echo

Use this command to configure an ICMP echo RNS probe.

**icmp-echo** { *destination-ip-address* | *destination-hostname* [ **name-server** *ip-address* ] }  
[ **source-ipaddr** *ip-address* ] [ **out-interface** *type num* [ **next-hop** *ip-address* ] ]

**Parameter  
Description**

Parameter	Description
<i>destination-hostname</i>	Sets the destination host name within 127 characters. The exceeding characters are truncated automatically.
<b>name-server</b> <i>ip-address</i>	Sets the domain name server. The default domain name server is configured via the <b>ip name-server</b> command.
<b>source-ipaddr</b> <i>ip-address</i>	Sets the source IP address for the ICMP echo packets.
<b>out-interface</b> <i>type num</i>	Sets the egress port(non-management) for the probe packet.
<b>next-hop</b> <i>ip-address</i>	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

## 8.5 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
<i>operation-number</i>	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 RNS configuration mode.

At present, IP RNS probe only supports IPv4 upon 500 objects at most, which depends on device performance. As a value-added feature, too much IP RNS probe may lead in system overload. As a result, it will be disabled for the time being, ensuring normal function of core services (e.g. routing). After the IP RNS configuration mode is enabled, the probe object will not be created unless the probe type is configured. If the type is set and object is created, use the **ip rns schedule** command to configure the startup policy, or the probe cannot be performed; use the **ip rns** command to enter the sub 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** The following example defines the IP RNS object 1.

**Examples**

```
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
<b>show ip rns statistics</b>	Displays the statistical data on the IP RNS object.

**Platform** N/A

**Description**

## 8.6 ip rns reaction-configuration

Use this command to configure proactive threshold monitoring and trigger for the IP 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
<i>operation-number</i>	Operation index, in the range from 1 to 500.
<i>monitored-element</i>	<ul style="list-style-type: none"> <li>Monitored element. The available parameters are listed as follows:</li> <li><b>allfail</b>: Failed to monitor all elements. The default action-type is <b>track</b>. This parameter is applied on the track module for communication.</li> <li><b>rtt</b>: Packet round trip time (RTT) exceeds the threshold range.</li> <li><b>•timeout</b>: Timeout in whatever direction.</li> </ul>
<b>action-type</b> <i>option</i>	<ul style="list-style-type: none"> <li>The available parameters include:</li> </ul>

	<ul style="list-style-type: none"> <li>● <b>none</b>: No action, which is the default setting</li> <li>● <b>trigger</b>: Only supports the <b>trigger</b> action.</li> <li>● <b>track</b>: Only supports the <b>track</b> action. Only when <b>monitored-element</b> is <b>allfail</b> is this parameter supported, which is available exclusively.</li> </ul>
<b>average</b> [ <i>number-of-measurements</i> ]	Triggers operation when the average value of <b>number-of-measurements</b> consecutive times exceeds the threshold range. For example. <i>number-of-measurements</i> is set to three. Upper and lower thresholds are 5000 and 4000 respectively. <b>The average value for three consecutive measurements 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.</b>
<b>consecutive</b> [ <i>occurrences</i> ]	Triggers operation when the value of monitored element exceeds the threshold range for <i>occurrences</i> consecutive times. The valid range is from 1 to 16. The default is 5.
<b>immediate</b>	Triggers operation immediately when the value of monitored element exceeds the threshold range.
<b>never</b>	Never triggers operation.
<b>xofy</b> [ 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.
<b>threshold-value</b> <i>upper-threshold</i> <i>lower-threshold</i>	Configures upper and lower thresholds.  When <i>monitored-element</i> is <b>rtt</b> , this parameter indicates time, in the range from 0 to 60,000 milliseconds. See <b>Usage Guide</b> 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 IP RNS object can be configured with multiple thresholds monitoring, each for one element. Monitored elements that are supported vary with different probe types.

monitored-element	icmp-echo	dns
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** The following example configures RNS1 and its threshold monitoring.

**Examples**

```
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** N/A  
**Description**

## 8.7 ip rns reaction-trigger

Use this command to enable the IP RNS probe which exceeds the monitoring threshold to trigger another IP 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
<i>operation-number</i>	The source operation number, in the range from 1 to 500
<i>target-operation</i>	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** The following example enables IP RNS1 to trigger IP RNS 2.

**Examples**

```
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

## 8.8ip rns reset

Use this command to clear all IP 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 IP RNS configuration. This command is used only in extreme cases (for example, RNS probe configuration is wrong).

**Configuration** The following example clears all IP RNS configuration.

**Examples**

```
Ruijie(config)# ip rns reset
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

## 8.9ip rns restart

Use this command to restart the IP RNS probe.

**ip rns restart operation-number****Parameter**

Parameter	Description
-----------	-------------

<b>Description</b>		
	<i>operation-number</i>	Sets the IP RNS operation object number, in the range from 1 to 500.
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Global configuration mode	
<b>Usage Guide</b>	This command is used to restart the IP RNS probe whose schedule is in the pending state. This command is invalid for the IP RNS probe not configured with the scheduling policy.	
<b>Configuration</b>	The following example restarts IP RNS 1.	
<b>Examples</b>	<pre>Ruijie(config)# ip rns restart 1</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	N/A	N/A
<b>Platform</b>	N/A	
<b>Description</b>		

## 8.10 ip rns schedule

Use this command to configure the scheduling strategy, start time and survival time for the IP 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

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<i>operation-number</i>	RNS operation index, in the range from 1 to 500
	<b>life forever</b>	The RNS operation is valid forever.
	<b>life seconds</b>	The RNS survival time, measured in seconds
	<i>hh:mm</i> [ <i>:ss</i> ]	Defines the time when the operation starts,
	<i>month</i>	The month when the operation starts, in the range from January (Jan.) to December (Dec.). The default is the current month.
	<i>day</i>	The day when the operation starts, in the range from 1 to 31. The default is the current day.
	<b>pending</b>	The start time is pending.
	<b>now</b>	The operation starts right now.
	<b>after</b> <i>hh:mm:ss</i>	The operation starts after hh hours, mm minutes and ss seconds.
	<b>recurring</b>	The operation starts automatically as scheduled every day.

- Defaults** The IP 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** The following example configures the RNS probe with scheduling policy.

**Examples**

```
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** N/A

**Description**

## 8.11 object

Use this command to add a tracked object to the object track list.

Use the **no** form of this command to delete a traced object.

**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

## 8.12 request-data-size

Use the following example to set the protocol payload size of IP 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
-----------	-------------

<i>bytes</i>	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

**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

**Configuration** The following example sets the protocol payload size of the IP RNS probe packet to 50.

**Examples**

```
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** N/A

**Description**

## 8.13 show ip rns configuration

Use this command to display the RNS instance configuration.

**show ip rns configuration** [ *operation-number* ]

**Parameter Description**

Parameter	Description
<i>operation-number</i>	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** The following example displays the RNS 1 configuration.

**Examples**

```
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** N/A

**Description**

## 8.14 show ip rns collection-statistics

Use this command to display statistics about the RNS probe.

**show ip rns collection-statistics** [ *operation-number* ]

#### Parameter Description

Parameter	Description
<i>operation-number</i>	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** The following example displays statistics about the all RNS probes.

**Examples**

```
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	IP 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** N/A

**Description**

## 8.15 show ip rns operational-state

Use this command to display operational state.

**show ip rns operational-state** [ *operation-number* ]

Parameter Description	Parameter	Description
	<i>operation-number</i>	Sets the IP 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** The following example displays the state information about all RNS probes.

### Examples

```
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	IP 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** N/A  
**Description**

## 8.16 show ip rns reaction-configuration

Use this command to display the proactive threshold monitoring information of an IP RNS probe.

**show ip rns reaction-trigger** [ *operation-number* ]

#### Parameter Description

Parameter	Description
<i>operation-number</i>	The number of IP 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 IP RNS probe.

**Configuration Examples** The following example displays the proactive threshold monitoring information of all IP RNS probes.

#### Examples

```
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	<p>The available parameters are listed as follows:</p> <p><b>never</b>: Never triggers operation.</p> <p><b>consecutive</b>: Triggers operation when the value of monitored element exceeds the threshold range for <i>occurrences</i> consecutive times.</p> <p><b>average</b>: Triggers operation when the average value of <b>number-of-measurements</b> <b>consecutive times</b> exceeds the threshold range.</p> <p><b>immediate</b>: Triggers operation immediately when the value of monitored element exceeds the threshold range.</p> <p><b>xofy</b>: X probes among the latest Y ones exceed the threshold range.</p>
Rising (milliseconds)	Upper threshold
Falling (milliseconds)	Lower threshold
Threshold Count	The parameter refers to the x value when the threshold-type is <b>xofy</b> or the average count when the threshold-type is <b>average</b> .
Threshold Count2	The parameter refers to the y value when the threshold-type is <b>xofy</b> or the consecutive count when the threshold-type is <b>consecutive</b> .
Action Type	Action type

#### Related Commands

Command	Description
N/A	N/A

#### Platform Description

N/A

## 8.17 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
	<i>operation-number</i>	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  
Mode** Privileged EXEC mode

**Usage Guide** This command is used to display the reaction trigger information for all RNS objects.

**Configuration** The following example displays the reaction trigger information for all RNS objects.

**Examples**

```
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

## 8.18 show ip rns statistics

Use this command to display the RNS object statistics.

**show ip rns statistics** [ *operation-number* ]

Parameter Description	Parameter	Description

<i>operation-number</i>	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

## 8.19 show track

Use this command to display statistics of the tracked object.

**show track** [ *track-number* ]

**Parameter Description**

Parameter	Description
<i>track-number</i>	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** The following example displays statistics of all tracked objects.

**Examples**

```
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

## 8.20 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** The following example displays the statistics of the client connecting to track.

**Examples**

```
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

## 8.21 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

<i>text</i>	Sets the tag for IP RNS probe, which is composed of up to 79 printable characters.
-------------	--

**Defaults** N/A

**Command** IP RNS DNS configuration mode

**Mode** IP RNS ICMP echo configuration mode

**Usage Guide** Tag is used to identify the probe. When the tag exceeds 79 characters, the surplus characters are truncated.

**Configuration** The following example sets the tag for IP RNS probe to telecom gateway.

**Examples**

```
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** N/A

**Description**

## 8.22 threshold

Use this command to configure the upper threshold value for IP RNS probe.

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

**threshold** *milliseconds*

**no threshold**

**Parameter  
Description**

Parameter	Description
<i>milliseconds</i>	Sets the upper threshold value, in the range from 0 to 60,000 in the unit of milliseconds.

**Defaults** The default is 5,000 milliseconds.

**Command** IP RNS DNS configuration mode

**Mode** IP RNS ICMP 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** The following example sets the upper threshold value for IP RNS probe to 8,000 milliseconds.

**Examples**

```
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** N/A

**Description**

## 8.23 timeout

Use this command to set the timeout time of an IP RNS probe.

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

**timeout** *milliseconds*

**no timeout**

**Parameter  
Description**

Parameter	Description
<i>milliseconds</i>	Sets the timeout time, in the range from 10 to 604,800,000 in the unit of milliseconds. The default is 5,000 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** IP RNS ICMP echo configuration mode

**Mode** IP RNS DNS 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** The following example sets the timeout time of an IP RNS probe to 10,000 milliseconds.

**Examples**

```
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
<b>frequency</b> <i>milliseconds</i>	Sets the interval of sending the packets.



**Platform** N/A

**Description**

## 8.24 tos

Use this command to set the Type of Service (ToS) field in the IPv4 header of an IP RNS probe packet.

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

**tos** *number*

**no tos**

**Parameter  
Description**

Parameter	Description
<i>number</i>	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** IP RNS DNS configuration mode

**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** The following example sets the ToS field in the IPv4 header of an IP RNS probe packet to 128.

**Examples**

```
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** N/A

**Description**

## 8.25 track interface line-protocol

Use this command to configure a tracked object to track the interface status and enter the track mode.

Use the **no** form of this command to delete a tracked object.

**track** *object-number* **interface** *interface-type interface-number* **line-protocol**  
**no track** *object-number*

**Parameter  
Description**

Parameter	Description
<i>object-number</i>	Sets the tracked object number, in the range of 1 to 700.
<i>interface-type</i> <i>interface-number</i>	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** The following example configures the object "track 3" to track the link state of ethernet 0/1.

**Examples** Ruijie(config)# track 3 interface ethernet 0/1 line-protocol

**Related  
Commands**

Command	Description
<b>track rns</b>	Configures a tracked object to track the operating status of an rns object.
<b>show track</b>	Displays the tracked object related information.

**Platform** N/A

**Description**

## 8.26 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
<i>object-number</i>	Sets the number of the tracked object, in the range from 1 to 700.

**Defaults** N/A

**Command** Global configuration mode

**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** N/A  
**Description**

## 8.27 track rns

Use this command to configure a tracked object to track the operating status of an RNS object and enter the track mode.

Use 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
<i>object-number</i>	Sets the tracked object number, in the range from 1 to 700.
<i>entry-number</i>	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 5 rns 7
```

Related Commands	Command	Description
	<b>track interface line-protocol</b>	Tracks the status of one interface and enter the track mode.
	<b>show track</b> [ <i>track-number</i> ]	Displays the tracked object related information.

**Platform** N/A  
**Description**

## 8.28 vrf

Use this command to set the VRF where the IP RNS probe resides.

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

**vrf** *vrf-name*

**no vrf**

Parameter Description	Parameter	Description
	<i>vrf-name</i>	Sets the VRF name.

**Defaults** N/A

**Command** IP RNS ICMP echo configuration mode  
**Mode** IP RNS DNS configuration mode

**Usage Guide** N/A

**Configuration** The following example sets the VRF where the IP RNS probe resides to VPN1.

**Examples**

```
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
	<b>frequency</b> <i>milliseconds</i>	Sets the interval of sending the packets.

**Platform** N/A  
**Description**



## Network Management & Monitoring Commands

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1. SNMP Commands
2. RMON Commands
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# 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** N/A  
**Description**

## 1.2 show snmp

Use this command to display the SNMP configuration.

**show snmp [ mib | user | view | group | host ]**

Parameter Description	Parameter	Description
	<b>mib</b>	Displays the SNMP MIBs supported.
	<b>user</b>	Displays the SNMP user information.
	<b>view</b>	Displays the SNMP view information.
	<b>group</b>	Displays the SNMP user group information.
	<b>host</b>	Displays the explicit host configuration.

**Defaults** N/A

**Command mode** Privileged EXEC mode.

**Usage Guide** N/A

**Configuration** The example below displays the SNMP configuration:

**Examples**

```
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
<b>snmp-server chassis-id</b>	Specifies the SNMP system sequence number.

**Platform** N/A

**Description**

## 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	<p>The following example disables the interface to send link traps.</p> <pre>Ruijie(config)# interface gigabitEthernet 1/1 Ruijie(config-if-GigabitEthernet 1/1)# no snmp trap link-status</pre> <p>The following example enables the interface to send link traps.</p> <pre>Ruijie(config)# interface gigabitEthernet 1/1 Ruijie(config-if-GigabitEthernet 1/1)# snmp trap link-status</pre>	
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
	<i>text</i>	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** The following example specifies the SNMP chassis ID as 123456:

**Examples** Ruijie(config)# **snmp-server chassis-id 123456**

**Related  
Commands**

Command	Description
<b>show snmp</b>	Displays the SNMP configuration.

**Platform** N/A

**Description**

## 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.
<i>string</i>	Community string, which is the communication password between the NMS and the SNMP agent
<i>view-name</i>	View name
<b>ro</b>	Indicates that the NMS can only read the variables of the MIB.
<b>rw</b>	Indicates that the NMS can read and write the variables of the MIB.
<i>aclnum</i>	Access list number (1 to 199, and 1300 to 2699), which specifies the IPv4 addresses that are permitted to access the MIB.
<i>aclname</i>	Access list name, which specifies the IPv4 addresses that are permitted to access the MIB.
<i>ipv6-aclname</i>	IPv6 access list name, which specifies the IPv6 addresses that are permitted to access the MIB.
<i>ipaddr</i>	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
<b>access-list</b>	Defines an access list.

**Platform** N/A

**Description**

## 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
<i>text</i>	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
<b>show snmp-server</b>	Displays the SNMP configuration.
<b>no snmp-server</b>	Disables the SNMP agent function.

**Platform** N/A

**Description**

## 1.7 snmp-server enable traps

Use this command to enable the SNMP agent to send the SNMP trap message to NMS. Use the **no** form of this command to disable the SNMP agent to send the SNMP trap message to NMS.

**snmp-server enable traps** [ *notification-type* ]

**no snmp-server enable traps**

Parameter Description	Parameter	Description
	<i>notification-type</i>	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
	<b>snmp-server host</b>	Specifies the SNMP host to send the SNMP trap message.

**Platform** N/A  
**Description**

## 1.8 snmp-server flow-control

Use this command to configure the SNMP flow control. Use the **no** form of this command to restore

the default setting.

**snmp-server flow-control pps** [ *count* ]

**no snmp-server flow-control pps**

Parameter Description	Parameter	Description
	<i>count</i>	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** The following example configures the number of SNMP requests processed per second to 200.

**Examples** Ruijie(config)# snmp-server flow-control pps 200

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 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
	<b>v1</b>   <b>v2c</b>   <b>v3</b>	Specifies the SNMP version
	<b>auth</b>	Specifies authentication of a packet without encrypting it. This applies to SNMPv3 only.
	<b>noauth</b>	Specifies no authentication a packet. This applies to SNMPv3 only.
	<b>priv</b>	Specifies authentication of a packet with encryption. This applies to SNMPv3 only.
	<i>readview</i>	Specifies a read-only view for the SNMP group. This view enables

	you to view only the contents of the agent.
<i>writeview</i>	Specifies a write view for the SNMP group. This view enables you to enter data and configure the contents of the agent.
<i>aclnum</i>	Access list number, which specifies the IPV4 addresses that are permitted to access the MIB.
<i>aclname</i>	Name of the access list, which specifies the IPV4 addresses that are permitted to access the MIB.
<i>ipv6_aclname</i>	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** The following example configures a new SNMP group.

**Examples** Ruijie(config)# snmp-server group mib2user v3 priv read mib2

Related Commands	Command	Description
	<b>show snmp group</b>	Displays the SNMP group configuration.

**Platform** N/A

**Description**

## 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* } [ **vrf** *vrfname* ] [ **traps** | **informs** ] [ **version** { **1** | **2c** | **3** [ **auth** | **noauth** | **priv** ] ] *community-string* [ **udp-port** *port-num* ] [ *notification-type* ]

**no snmp-server host** [ **oob** ] { *host-addr* | **ipv6** *ipv6-addr* } [ **vrf** *vrfname* ] [ **traps** | **informs** ] [ **version** { **1** | **2c** | **3** [ **auth** | **noauth** | **priv** ] ] *community-string* [ **udp-port** *port-num* ]

Parameter Description	Parameter	Description
	<b>oob</b>	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.
	<i>host-addr</i>	SNMP host address
	<i>ipv6-addr</i>	SNMP host address(ipv6)

<i>vrfname</i>	Set the name of vrf forwarding table
<b>trap   informs</b>	Enables the host to send the SNMP notification as traps or informs.
<b>version</b>	SNMP version: V1, V2C or V3
<b>auth   noauth   priv</b>	Security level of SNMPv3 users
<i>community-string</i>	Community string or username (SNMPv3 version)
<i>port-num</i>	Port of the SNMP host
<i>notification-type</i>	The type of the SNMP trap message, such as <b>snmp</b> . 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.

**Configuration** The following example specifies an SNMP host to receive the SNMP event trap:

**Examples** Ruijie(config)# **snmp-server host 192.168.12.219 public snmp**

Related Commands	Command	Description
	<b>snmp-server enable traps</b>	Enables the SNMP agent to send the SNMP trap message.

**Platform** N/A

**Description**

## 1.11 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
	<i>text</i>	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** The following example sets the system location information:

**Examples** Ruijie(config)# **snmp-server location** start-technology-city 4F of A Buliding

**Related Commands**

Command	Description
<b>snmp-server contact</b>	Sets the system contact information.

**Platform Description** N/A

## 1.12 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
<i>text</i>	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** The following example configures the network element coding text to FZ\_CDMA\_MSC1.

**Examples** Ruijie(config)# **snmp-server net-id** FZ\_CDMA\_MSC1

**Related Commands**

Command	Description
N/A	N/A

Platform N/A

Description

## 1.13 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
	<i>byte-count</i>	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** N/A

**Examples**

Related Commands	Command	Description
	<b>snmp-server queue-length</b>	Specifies the length of the message queue for each SNMP trap host.

Platform N/A

Description

## 1.14 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



<i>length</i>	Queue length. The range is from 1 to 1000.
---------------	--

**Defaults** The default is 10.

**Command mode** Global configuration 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** The following example specifies the length of message queue as 100.

**Examples** Ruijie(config)# snmp-server queue-length 100

<b>Related Commands</b>	Command	Description
	<b>snmp-server packetsize</b>	Specifies the largest size of the SNMP packet.

**Platform** N/A

**Description**

## 1.15 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**

<b>Parameter Description</b>	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** The following example enables the SNMP message reload function:

**Examples** Ruijie(config)# snmp-server system-shutdown

<b>Related</b>	Command	Description

Commands		
	N/A	N/A

Platform N/A

Description

## 1.16 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** The following example configures the SNMP trap format with the private field.

**Examples** Ruijie(config)# snmp-server trap-format private

Related Commands	Command	Description
	N/A	N/A

Platform N/A

Description

## 1.17 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
	<i>interface</i>	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
	<b>snmp-server enable traps</b>	Enables t the SNMP agent to send the SNMP trap message to NMS.
	<b>snmp-server host</b>	Specifies the NMS host to send the SNMP trap message.

**Platform** N/A

**Description**

## 1.18 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
	<i>seconds</i>	Timeout ( in seconds) of retransmit the SNMP trap message. The range is from 1 to 1,000.

**Defaults** The default is 30 seconds.

**Command** Global configuration mode.

**mode****Usage Guide** N/A**Configuration** The following example specifies the timeout period as 60 seconds.**Examples**

```
Ruijie(config)# snmp-server trap-timeout 60
```

**Related  
Commands**

Command	Description
<b>snmp-server queue-length</b>	Specifies the length of message queue for the SNMP trap host.
<b>snmp-server host</b>	Specifies the NMS host to send the SNMP trap message.
<b>snmp-server trap-source</b>	Specifies the source address of the SNMP trap message.

**Platform** N/A**Description**

## 1.19 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
<i>port-number</i>	Specifies a port to receive the SNMP packets.

**Defaults** The default is 161.**Command  
mode** Global configuration mode.**Usage Guide** N/A

**Configuration** The following example specifies port 15000 to receive the SNMP packets.

**Examples**

```
Ruijie(config)# snmp-server udp-port 15000
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 1.20 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
<i>username</i>	Name of the user on the host that connects to the agent.
<i>groupname</i>	Name of the group to which the user belongs.
<b>v1</b>   <b>v2c</b>   <b>v3</b>	Specifies the SNMP version. But only SNMPv3 supports the following security parameters.
<b>encrypted</b>	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.
<b>auth</b>	Specifies which authentication level should be used.
<i>auth-password</i>	Password string (no more than 32 characters) used by the authentication protocol. The system will change the password to the corresponding authentication key.
<b>priv</b>	Encryption mode. <i>des56</i> refers to 56-bit DES encryption protocol. <i>priv-password</i> : password string (no more than 32 characters) used for encryption. The system will change the password to the corresponding encryption key.

<b>md5</b>	Enables the MD5 authentication protocol. While the <b>sha</b> enables the SHA authentication protocol.
<i>aclnumber</i>	Access list number, which specifies the IPV4 addresses that are permitted to access the MIB.
<i>aclname</i>	Name of the access list, which specifies the IPV4 addresses that are permitted to access the MIB.
<i>ipv6_aclname</i>	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** The following example configures an SNMPv3 user with MD5 authentication and DES encryption:

**Examples**

```
Ruijie(config)# snmp-server user user-2 mib2user v3 auth md5 authpassstr priv  
des56 despassstr
```

Related Commands	Command	Description
	<b>show snmp user</b>	Displays the SNMP user configuration.

**Platform** N/A

**Description**

## 1.21 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
	<i>view-name</i>	View name
	<i>oid-tree</i>	Specifies the MIB object to associate with the view.
	<b>include</b>	Includes the sub trees of the MIB object in the view.
	<b>exclude</b>	Excludes the sub trees of the MIB object from the view.

**Defaults** By default, a view is set to access all MIB objects.

**Command** Global configuration mode.

**Usage Guide** N/A

**Configuration** The following example sets a view that includes all MIB-2 sub-trees (oid is 1.3.6.1).

**Examples** Ruijie(config)# snmp-server view mib2 1.3.6.1 include

**Related  
Commands**

Command	Description
show snmp view	Displays the SNMP view configuration.

**Platform** N/A

**Description**

## 1.22 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
<i>retry-num</i>	Specifies the resend times for inform requests, ranging from 0 to 255.
<i>time</i>	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** Global configuration mode.

**Usage Guide** N/A

**Configuration** The following example configures the resend times of inform requests to 5.

**Examples** 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

---

<b>Platform</b>	N/A
<b>Description</b>	



## 2 RMON 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
	<i>number</i>	Alarm number. The value ranges from 1-65,535.
	<i>variable</i>	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).
	<i>interval</i>	Sampling interval. The value ranges from 1 to 2,147,483,647 in the unit of second.
	<b>absolute</b>	Absolute sampling. In this mode, when the sampling time arrives, the system directly invokes the variable value.
	<b>delta</b>	Delta sampling. In this mode, when the sampling time arrives, the system invokes the delta value of the variable within the sampling interval.
	<b>rising-threshold value</b>	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.
	<i>event-number</i>	The event number ranges from 1 to 65,535.
	<b>falling-threshold value</b>	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.
	<b>owner ownername</b>	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
<b>rmon event</b> <i>number</i> [ <b>log</b> ] [ <b>trap</b> <i>community</i> ] <b>description</b> <i>string</i> [ <b>owner</b> <i>owner-string</i> ]	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
<i>index</i>	Index of a history entry. The value ranges from 1 to 65,535.
<b>owner</b> <i>ownername</i>	Owner of an entry. The value is a character string consisting of 1 to 63 characters that are case sensitive.
<b>buckets</b> <i>bucket-number</i>	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.
<b>interval</b> <i>seconds</i>	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 history 1 owner UserA buckets 5
interval 60
```

**Related commands**

Command	Description
<b>rmon collection stats</b> <i>index</i> [ <b>owner</b> <i>owner-name</i> ]	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
<i>index</i>	Index of the statistic table. The value ranges from 1 to 65,535.
<b>owner</b> <i>ownername</i>	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 stats 1 owner UserA
```

### Related commands

Command	Description
<b>rmon collection history</b> <i>index</i> [ <b>owner</b> <i>owner-name</i> ] <b>[buckets</b> <i>bucket-number</i> ] [ <b>interval</b> <i>seconds</i> ]	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
<i>number</i>	Event number. The value ranges from 1 to 65,535.
<b>log</b>	(Optional) Log event. When a log event is triggered, the system records a log.
<b>trap</b> <i>community</i>	(Optional) Trap event. When a trap event is triggered, the system sends trap with the group named "community".

<b>description</b> <i>description-string</i>	(Optional) Description of the event. The value is a character string consisting of 1 to 127 characters.
<b>owner</b> <i>owner-name</i>	(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
	<b>rmon alarm</b> <i>number variable interval {absolute   delta } rising-threshold value [event-number] falling-threshold value [event-number] [owner ownername]</i>	Adds an alarm entry.

## 2.5 show rmon

**Default** 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

**Default** 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
<b>rmon alarm</b> <i>number variable</i> <i>interval {absolute   delta }</i> <b>rising-threshold</b> <i>value</i> <i>[event-number]</i> <b>falling-threshold</b> <i>value</i> <i>[event-number]</i> <b>owner</b> <i>ownername]</i>	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.

The example below displays the event configuration.

Examples

```
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
<b>rmon event</b> <i>number</i> [ <b>log</b> ] [ <b>trap</b> <i>community</i> ] [ <b>description</b> <i>description-string</i> ] [ <b>owner</b> <i>ownername</i> ]	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.

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
```

**Examples**

```
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
<b>rmon collection history</b> <i>index</i> [owner <i>ownername</i> ] [ <b>buckets</b> <i>bucket-number</i> ] [ <b>interval</b> <i>seconds</i> ]	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.

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
```

**Examples**

```
packets128To255Octets = 2098146
packets256To511Octets = 126716
packets512To1023Octets = 363621
packets1024To1518Octets = 1077865
```

**Related  
commands**

Command	Description
<b>rmon collection stats</b> <i>index</i> [ <b>owner</b> <i>owner-string</i> ]	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** The following example disables NTP.

**Examples** Ruijie (config) #**no ntp**

Related Commands	Command	Description
	<b>ntp server</b>	Specifies an NTP server.

**Platform** N/A

**Description**

### 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
	<b>peer</b>	Allows the device to receive time requests and NTP control queries to synchronize itself to the servers specified in the access list.

<b>serve</b>	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.
<b>serve-only</b>	Allows the device to receive only time requests from the servers specified in the access list.
<b>query-only</b>	Allows the device to receive only NTP control queries from servers specified in the access list.
<i>access-list-number</i>	Access control list number, ranging from 1 to 99 and 1300 to 1999.
<i>access-list-name</i>	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
<b>ip access-list</b>	Creates an IP access control list.

**Platform** N/A  
**Description**

### 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 woooooop
Ruijie(config)#ntp trusted-key 6
Ruijie(config)#ntp authenticate
```

**Related  
Commands**

Command	Description
<b>ntp authentication-key</b>	Sets the global authentication key.
<b>ntp trusted-key</b>	Configures the global trusted key.

**Platform**

N/A

**Description**

## 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
<i>key-id</i>	Key ID, ranging from 1 to 4294967295.
<i>key-string</i>	Key string

<i>enc-type</i>	(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** The following example configures an NTP authentication key.

**Examples**

```
Ruijie(config)#ntp authentication-key 6 md5 woooooop
```

<b>Related Commands</b>	Command	Description
	<b>ntp authenticate</b>	Enables NTP authentication.
	<b>ntp trusted-key</b>	Configures an NTP trusted key.
	<b>ntp server</b>	Specifies an NTP server.

**Platform** N/A

**Description**

### 3.5 ntp disable

Use this command to disable the device to receive NTP packets on the specified interface.

**ntp disable**

<b>Parameter Description</b>	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** The following example disables the device to receive the NTP packets.

**Examples** Ruijie(config-if)# no ntp disable

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 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
<i>stratum</i>	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 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** The following example configures the device to act as an authoritative NTP server, and sets the stratum level to 12:

**Examples**

```
Ruijie(config)# ntp master 12
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 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** ]

**no ntp server** *ip-addr*

**Parameter  
Description**

Parameter	Description
<b>oob</b>	(Optional) Accesses the NTP server from the MGMT interface. By default, this option is disabled.
<b>vrf</b> <i>vrf-name</i>	Specifies the virtual routing and forwarding (VRF) name. By default, this parameter is disabled.
<i>ip-addr</i>	Sets the IP address of the NTP server. The address can be in IPv4 or IPv6 format.
<i>domain</i>	Sets the domain name of the NTP server, supporting IPv4 and IPv6.
<i>version</i>	(Optional) Specifies the NTP version (1-3). The default is NTPv3.
<i>if-name</i>	(Optional) Specifies the source interface from which the NTP message is sent (L3 interface).
<i>keyid</i>	(Optional) Specifies the encryption key adopted when communication with the corresponding server. The key ID range is from 1 to 4,294,967,295.
<b>prefer</b>	(Optional) Specifies the given NTP server as the preferred one.

**Defaults** No NTP server is configured by default.


**Command mode** Global configuration 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** The following example configures an NTP server.

**Examples** For IPv4: `Ruijie(config)# ntp server 192.168.210.222`  
For IPv6: `Ruijie(config)# ntp server 10::2`

Related Commands	Command	Description
	<code>no ntp</code>	Disables NTP.

**Platform** N/A  
**Description**

## 3.8 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
	<i>key-id</i>	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** The following example configures an authentication key and sets it as a trusted key.

**Examples** `Ruijie(config)#ntp authentication-key 6 md5 woooooop`  
`Ruijie(config)#ntp trusted-key 6`

```
Ruijie(config)#ntp server 192.168.210.222 key 6
```

**Related  
Commands**

Command	Description
<b>ntp authenticate</b>	Enables NTP authentication.
<b>ntp authentication-key</b>	Configures an NTP authentication key.
<b>ntp server</b>	Configures an NTP server.

**Platform** N/A**Description**

### 3.9 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** The following example configures the NTP update calendar periodically.**Examples**

```
Ruijie(config)# ntp update-calendar
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A**Description**

### 3.10 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** The following example displays the NTP server.

**Examples**

```
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

### 3.11 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** The following example displays the NTP configuration.

**Examples**

```
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
	<b>show sntp</b>	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
	<i>seconds</i>	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** Global configuration mode.

**Usage Guide** To make the synchronization interval configuration effective, run the **sntp enable** command.

**Configuration** The following example configures the synchronization interval to 3,600 seconds.

**Examples** Ruijie(config)# sntp interval 3600

**Related  
Commands**

Command	Description
<b>sntp enable</b>	Enables SNTP.
<b>show sntp</b>	Displays the SNTP configuration.

**Platform** N/A

**Description**

## 4.3 sntp server

Use this command to specify an SNTP server. Use the **no** form of this command to remove the SNTP server.

**sntp server** [ **oob** ] *ip- address*

**no sntp server**

**Parameter  
Description**

Parameter	Description
<i>ip-address</i>	IP address of the SNTP server.
<b>oob</b>	MGMT interface.

**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** The following example specifies an SNTP server in Internet.

**Examples** Ruijie(config)# sntp server 192.168.4.12

**Related  
Commands**

Command	Description
<b>show sntp</b>	Displays the SNTP configuration.
<b>sntp enable</b>	Enables SNTP.

**Platform** N/A  
**Description**

## 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
<b>sntp enable</b>	Enables SNTP.

**Platform** N/A  
**Description**

## 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**

**no mac-loopback**

Parameter Description	Parameter	Description
	N/A	N/A

**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** N/A

**Description**

## 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** ] [ **acl** *acl-name* ]

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* [**switch** ]

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* [ **rx** ]

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 the specified remote SPAN session, or remove 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
<i>session_number</i>	SPAN session number
<i>interface-id</i>	Interface name
<b>acl</b> <i>acl-name</i>	Access list name
<i>remote-vlan-id</i>	Remote VLAN ID
<i>vlan-id</i>	VLAN ID (remote VLAN excluded)
<i>vlan-id-list</i>	VLAN list (remote VLAN excluded)
<b>rx</b>	Monitors the only received traffic.
<b>tx</b>	Monitors the only transmitted traffic.
<b>both</b>	Monitors both received and transmitted traffic. This is the default.
<b>switch</b>	Enables switching on the destination port. Switching function 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** feature is disabled on the destination port.

**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 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
```

#### Related Commands

Command	Description
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** The following example configures a remote SPAN VLAN.

**Examples**

```
Ruijie(config)# vlan 100
Ruijie(config-vlan)# remote-span
```

Related Commands	Command	Description
	<b>show vlan</b>	Displays VLAN configuration.

**Platform** N/A

**Description**

## 5.4 show monitor

Use this command to display the SPAN configurations.

**show monitor** [ **session** *session\_number* ]

Parameter Description	Parameter	Description
	<i>session_number</i>	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** This following example displays all SPAN sessions.

**Examples**

```
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 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
	<i>ip_address</i>	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
	<b>show monitor</b>	Displays the mirror sessions.

**Platform** N/A

**Description**

### 6.2 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
	<i>dscp-value</i>	The DSCP value of the IP packets.

**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** The following example configures the DSCP value of the IP packets.

**Examples**

```
Ruijie(config)# monitor session 2 erspan-source  
Ruijie(config-mon-erspan-src)#ip dscp 56
```

**Related  
Commands**

Command	Description
<b>show monitor</b>	Displays the mirror sessions.

**Platform  
Description** N/A

## 6.3 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
<i>ttl-value</i>	The TTL value of the IP packets.

**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** The following example configures the TTL value of IP packets.

**Examples**

```
Ruijie(config)# monitor session 2 erspan-source  
Ruijie(config-mon-erspan-src)#ip ttl 65
```

**Related**

Command	Description
---------	-------------

Commands		
	<b>show monitor</b>	Displays the mirror sessions.

Platform N/A

Description

## 6.4 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
	<i>session-num</i>	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 The following example creates an ERSPAN session.

Examples 

```
Ruijie(config)# monitor session 2 erspan-source
```

Related Commands	Command	Description
	<b>show monitor</b>	Displays the mirror session information.

Platform N/A

Description

## 6.5 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
	<i>ip_address</i>	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 <b>end</b> command or use the <b>Ctrl-C</b> key combination. To return to global configuration mode, enter the <b>exit</b> command.	
Configuration Examples	The following example configures the source IP address. <pre>Ruijie(config)# monitor session 2 erspan-source Ruijie(config-mon-erspan-src)origin ip address 11.1.1.2</pre>	
Related Commands	Command	Description
	<b>show monitor</b>	Displays the mirror sessions.
Platform Description	N/A	

## 6.6 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 <b>end</b> command or the <b>Ctrl-C</b> key combination. To return to global configuration mode, enter the <b>exit</b> command.	

**Configuration** The following example shuts down ERSPAN session 2.

**Examples**

```
Ruijie(config)# monitor session 2 erspan-source  
Ruijie(config-mon-erspan-src)#shutdown
```

**Related  
Commands**

Command	Description
<b>show monitor</b>	Displays the mirror sessions.

**Platform** N/A

**Description**

## 6.7 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* [ **rx** | **tx** | **both** ]  
**no source interface** *single-interface* [ **rx** | **tx** | **both** ]

Use this command to configure the flow-based ERSPAN source interface. Use the **no** form of this command to delete this source interface.

**source interface** *single-interface* **rx acl** *acl-name*

**Parameter  
Description**

Parameter	Description
<i>single-interface</i>	Source interface of the mirror.
<b>rx</b>	Receives only the traffic of Rx direction.
<b>tx</b>	Receives only the traffic of Tx direction.
<b>both</b>	(Default ) Receives the traffic of Tx and Rx directions.
<b>acl</b> <i>acl-name</i>	ACL name.

**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** The following example configures an ERSPAN source interface.

**Examples**

```
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.

```
source interface gigabitEthernet 0/3 rx acl 90
```

Related Commands	Command	Description
	<b>show monitor</b>	Displays the mirror sessions.

**Platform** N/A  
**Description**

## 6.8 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 Description	Parameter	Description
	<i>vrf-name</i>	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** The following example configures the VRF name.

**Examples**

```
Ruijie(config)# monitor session 2 erspan-source  
Ruijie(config-mon-erspan-src)# vrf vrf-name
```

Related Commands	Command	Description
	<b>show monitor</b>	Displays the mirror sessions.

**Platform** N/A  
**Description**



## Data Center Commands

---

### 1. VXLAN Commands

# 1 VXLAN Commands

## 1.1 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)# sho run int overlayrouter 1
```

```
Building configuration...
Current configuration : 72 bytes

interface OverlayRouter 1
  vrf forwarding vrf-test1
  anycast-gateway
```

## 1.2 arp suppress enable

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.

### 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)#sho vxlan arp suppress
ARP-SUPPRESS: ON
SEQUENCE NUMBER: 9
```

## 1.3 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
<i>vni-number</i>	Deletes the VXLAN MAC entries of a specified VNI.
<i>mac-address</i>	Deletes the VXLAN MAC entries of a specified address.

### 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#sho vxlan mac
VXLAN      MAC Address      Type      Location Interface      IP Address
-----
-----
```

```
20    0010.9400.0020    static  remote  overlayTunnel 12    2.2.2.2
30    0010.9400.0030    dynamic local  overlayTunnel 13    3.3.3.3
30    0010.9400.0040    dynamic local  overlayTunnel 13    3.3.3.3
30    0010.9400.0050    dynamic local  overlayTunnel 13    3.3.3.3
count: 4
```

## 1.4 clear vxlan statistics

Use this command to clear VXLAN traffic statistics of a VXLAN tunnel.

**clear vxlan statistics** [ *interface-name* ]

### Parameter Description

Parameter	Description
<i>interface-name</i>	Name of a static Overlay tunnel

**Defaults** N/A

**Command  
Mode** Privileged EXEC mode

**Default Level** 14

**Usage Guide** In SDN mode, use this command to delete VXLAN traffic statistics of a VXLAN tunnel.

**Configuration** The following example clears VXLAN traffic statistics of Overlay tunnel 3.

**Examples** Ruijie#clear vxlan statistics overlayTunnel 3

**Verification** Run the **show vxlan statistics** command to check whether VXLAN traffic statistics of the VXLAN tunnel are cleared.

```
Ruijie#show vxlan statistics overlayTunnel 1
OverlayTunnel 1
VXLAN 1:
    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
VXLAN 2:
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
```

## 1.5 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
	<i>vlan-id-list</i>	ID of the VLAN associated with a VXLAN instance, ranging from 1 to 4,094.

**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
```

**Verification** Run the **show vxlan vni-number** command to display the **extend-vlan** value.

```
Ruijie#show vxlan 2
VXLAN 2
  Source Address      : -
  Multicast Group     : -
  Extend VLAN        : 10
  VTEP Adjacency Count: 0
```

## 1.6 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  
Description**

Parameter	Description
<i>mac-addr</i>	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** The following example sets the virtual MAC address of the anycast gateway to 0000.1111.2222.

```
Ruijie#configure terminal
```

**Examples**

```
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
Anycast mac: 0000.5555.5555 .
0 overlayrouters enable anycast
```

## 1.7 mac-address-table auto-learning

Use this command to enable automatic learning of VXLAN MAC addresses on a device.

**mac-address-table auto-learning**

Use the **no** form of this command to disable automatic learning of VXLAN MAC addresses on a device.

**no mac-address-table auto-learning**

**Parameter  
Description****Parameter****Description**

N/A

N/A

**Defaults**

Automatic learning of VXLAN MAC addresses is enabled on a device by default.

**Command  
Mode**

VTEP configuration mode

**Default Level**

14

**Usage Guide**

In SDN mode, run the **no mac-address-table auto-learning** command to disable automatic learning of VXLAN MAC addresses on a device, to ensure that the device only receives VXLAN MAC addresses from the SDN controller. After the **mac-address-table auto-learning** command is run, automatic learning of VXLAN MAC addresses is enabled on the device by default.

**Configuration  
Examples**

The following example disables automatic learning of VXLAN MAC addresses on a device.

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
```

```
Ruijie(config)#vtep
Ruijie(config-vtep)# no mac-address-table auto-learning
```

**Verification**      N/A

## 1.8 overlaytunnel-vni-counting enable

Use this command to enable VXLAN traffic statistics collection for a VXLAN tunnel of a device.

**overlaytunnel-vni-counting enable**

Use the **no** form of this command to disable VXLAN traffic statistics collection for the VXLAN tunnel of the device.

**no overlaytunnel-vni-counting enable**

**Parameter  
Description**

Parameter	Description
N/A	N/A

**Defaults**      VXLAN traffic statistics collection is disabled for a VXLAN tunnel by default.

**Command  
Mode**      VTEP configuration mode

**Default Level**      14

**Usage Guide**      If statistics about tunnel interface traffic needs to be collected, run this command to enable traffic statistics collection for the VXLAN tunnel of a device.

**Configuration  
Examples**      The following example enables VXLAN traffic statistics collection for a VXLAN tunnel of a device.

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#vtep
Ruijie(config-vtep)# overlaytunnel-vni-counting enable
```

**Verification**      N/A

## 1.9 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.

**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** N/A

## 1.10 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
N/A	N/A

**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-VXLAN routing function is enabled, the device serves as a proxy and uses the device MAC address to respond to all ARP requests from the VXLAN to which the local Overlay router interface belongs. In this case, packets between hosts in the same VXLAN are forwarded through the VXLAN route.



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)#sho 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
```

## 1.11 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
	<i>interface-name</i>	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	<p>The following example sets the routing (gateway) interface of VXLAN 1 to an interface of Overlay router 1.</p> <pre>Ruijie#configure terminal Enter configuration commands, one per line. End with CNTL/Z. Ruijie(config)#vxlan 1 Ruijie(config-vxlan)#router-interface OverlayRouter 1</pre>	
Verification	<p>Run the <b>show vxlan vni-number</b> command to display the VXLAN routing (gateway) interface.</p> <pre>Ruijie#show vxlan 1</pre>	

```
VXLAN 1
  Source Address      : 1.1.1.1
  Multicast Group     : 224.1.1.1
  Router Interface    : OverlayRouter 1
  VTEP Adjacency Count: 0
```

## 1.12 show vxlan

Use this command to display the VXLAN configuration and status.

**show vxlan** [ *vni-number* ]

Parameter Description	Parameter	Description
	<i>vni-number</i>	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
  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

```

VXLAN 100

```

Source Address      : 1.1.1.1
Multicast Group     : 234.2.2.2
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 VXLAN instances
VXLAN capacity	Number of VXLAN instances that can be configured on the current device
source	Source address of a VXLAN instance
multicast	Multicast address of a VXLAN instance
destination	Destination VTEP address of a VXLAN instance
extend-vlan	Extended VLAN of a VXLAN instance

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
source	Source address of the VXLAN instance
multicast	Multicast address of the VXLAN instance
destination	Destination VTEP address of the VXLAN instance
extend-vlan	Extended VLAN of the VXLAN instance

Verification N/A

## 1.13 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
	<b>vni</b> <i>vni-number</i>	Displays the ARP information of a specified VXLAN. The value range of <i>vni-number</i> 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** command to display the VXLAN ARP suppression status on a device.

```
Ruijie#sho vxlan arp suppress
ARP-SUPPRESS: OFF
SEQUENCE NUMBER: 1
```

Verification N/A

## 1.14 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

<b>Command Mode</b>	Privileged EXEC mode, global configuration mode, and interface configuration mode
<b>Default Level</b>	14
<b>Usage Guide</b>	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.
<b>Configuration Examples</b>	<p>Run the <b>show vxlan global</b> command to display global VXLAN information.</p> <pre>Ruijie#show vxlan global Local switch vtep ip: 1.1.1.1, binds with interface loopback 1. Anycast mac: 0000.1111.2222 . 1 overlayrouters enable anycast</pre>
<b>Verification</b>	N/A

## 1.15 show vxlan keepalive

Use this command to display VXLAN tunnel detection information.

**show vxlan keepalive** [**overlaytunnel** *port-num*]

Parameter Description	Parameter	Description
	<b>overlaytunnel</b> <i>port-num</i>	Displays tunnel detection information of a specified Overlay tunnel interface.

<b>Command Mode</b>	Privileged EXEC mode, global configuration mode, and interface configuration mode
<b>Default Level</b>	14
<b>Usage Guide</b>	Use this command to display the tunnel interface detection information of the current device.
<b>Configuration Examples</b>	<p>Run the <b>show vxlan keepalive</b> command to display VXLAN tunnel detection information.</p> <pre>INTERFACE STATUS RESULT TIMEOUT-CNT CONF-TYPE FREQ TMOUT TIMES SOURCE-IP</pre>

```
DEST-IP
-----
-----
Overlaytunnel 1  UP  SUCCESS  0  GLOBAL      5      3      3      1.1.1.1
2.2.2.2
Overlaytunnel 2  DOWN  FAILED   3  PORT       2      3      3      1.1.1.1
3.3.3.3
```

Field description:

Field	Description
INTERFACE	Tunnel name
STATUS	Current status of the tunnel interface
SOURCE-IP	Source IP address used for keepalive packets of the tunnel interface
DEST-IP	Destination IP address used for keepalive packets of the tunnel interface
CONF-TYPE	Keepalive configuration type (GLOBAL: global configuration; PORT: tunnel interface configuration) validated on the tunnel interface

**Verification**      N/A

## 1.16 show vxlan mode

Use this command to display the configured VXLAN mode.

**show vxlan mode**

**Parameter**      N/A

**Description**

**Command Mode**      Privileged EXEC mode, global configuration mode, and interface configuration mode

**Default Level**    14

**Usage Guide**      The VXLAN modes include Bridge and Router. You can run this command to display the VXLAN mode of the current device.

**Configuration**    Run the **show vxlan mode** command to display the configured VXLAN mode.

**Examples**

```
Ruijie#show vxlan mode
VXLAN Device Mode: Router
```

Field description:

Field	Description
VXLAN Device Mode	Current VXLAN mode of the device. Available modes are as follows: 1: Router, indicating that the current VXLAN mode is Router, which is the default mode before delivery. 2: Bridge, indicating that the current VXLAN mode is Bridge. 3: Router (SDN), indicating that the current VXLAN mode is Router in the SDN environment. 4: Bridge (SDN), indicating that the current VXLAN mode is Bridge in the SDN environment.

Verification N/A

## 1.17 show vxlan statistics

Use this command to display VXLAN traffic statistics of a VXLAN tunnel.

**show vxlan statistics** *interface-name*

Parameter N/A

Description

**Command Mode** Privileged EXEC mode, global configuration mode, and interface configuration mode

**Default Level** 14

**Usage Guide** N/A

**Configuration Examples** In SDN mode, run the **show vxlan statistics** command to display VXLAN traffic statistics of a VXLAN tunnel.

```
Ruijie#show vxlan statistics overlayTunnel 1
OverlayTunnel 1
  VXLAN 1:
    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
  VXLAN 2:
```

```
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
Ruijie#
```

**Verification** N/A

## 1.18 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
	<b>vni</b> <i>vni-number</i>	Displays the VXLAN traffic statistics of a specified VXLAN tunnel. The value range of <i>vni-number</i> is 1 to 16,777,215.
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Privileged EXEC mode, global configuration mode, and interface configuration mode	
<b>Default Level</b>	14	
<b>Usage Guide</b>	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            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	Disabled	Disabled
Ruijie#			

**Verification** N/A

## 1.19 show vxlan udp-port

Use this command to display the VXLAN UDP destination port.

**show vxlan udp-port**

**Parameter** N/A

**Description**

**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

**Verification** N/A

## 1.20 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
<i>loopback-port-id</i>	Loopback port ID

**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
No anycast mac.
```

## 1.21 storm-control

Use this command to configure storm control on a VXLAN instance.

**storm-control broadcast | multicast | unicast** [*kpps-value* | **pps** *pps-value*]

Use the **no** form of this command to cancel storm control configuration of the VXLAN instance.



**no storm-control broadcast | multicast | unicast**

Parameter Description	Parameter	Description
	<i>kbps-value</i>	Rate limit value, in kbit/s
	<i>pps-value</i>	Rate limit value, in pps

**Defaults** No rate limit value is configured for VXLAN instances by default.

**Command Mode** VXLAN configuration mode

**Default Level** 14

**Usage Guide** To use VNI-based storm control, configure the storm control rate limit on a VXLAN instance.

**Configuration Examples** The following example configures storm control on 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 9600
Ruijie(config-vxlan)#storm-control multicast 8600
Ruijie(config-vxlan)#storm-control unicast 7600
```

**Verification** Run the **show vxlan storm-control vni 1** command to display the storm control configuration.

```
Ruijie# sho vxlan storm-control vni 1
VXLAN                               Broadcast Control Multicast Control Unicast Control
-----
900                                9600                        8600                        7600
```

## 1.22 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** This command takes effect only in EVPN mode.  
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.

**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
    Source Address          : -
    Multicast Group         : -
    Router Interface        : -
    Extend VLAN             : -
    VTEP Adjacency Count: 0
```

## 1.23 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*]

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<i>ip-address</i>	Destination (peer) IP address of an Overlay tunnel interface
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Overlay tunnel configuration mode	
<b>Default Level</b>	14	
<b>Usage Guide</b>	Use this command to specify the destination (peer) IP address of an Overlay tunnel interface.	
<b>Configuration Examples</b>	<p>The following example sets the destination IP address for an interface of Overlay tunnel 1 to 3.3.3.3.</p> <pre>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)# overlay mode vxlan Ruijie(config-if-OverlayTunnel 1)# tunnel destination 3.3.3.3</pre>	
<b>Verification</b>	<p>Run the <b>show running-config interface</b> command to display the interface configuration.</p> <pre>Ruijie#sh running-config interface OverlayTunnel 1 Building configuration... Current configuration : 174 bytes  interface OverlayTunnel 1   overlay mode vxlan   tunnel source 1.1.1.1   tunnel destination 3.3.3.3</pre>	

## 1.24 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
<i>ip-address</i>	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)# overlay mode vxlan
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
  overlay mode vxlan
  tunnel source 1.1.1.1
  tunnel destination 3.3.3.3
```

## 1.25 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	<p>The following example enables a device to enter the VTEP configuration mode.</p> <pre>Ruijie#configure terminal Enter configuration commands, one per line.  End with CNTL/Z. Ruijie(config)#vtep Ruijie(config-vtep)#</pre>	
Verification	N/A	

## 1.26 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
	<i>vni-number</i>	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.

**Examples**

```
Ruijie#configure terminal
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
  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

VXLAN 100
  Source Address      : 1.1.1.1
  Multicast Group     : 234.2.2.2
  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

## 1.27 vxlan convert mode

Use this command to switch the VXLAN control plane mode.

**vxlan convert mode {router | bridge | irb} {sdn | evpn}**

### Parameter Description

Parameter	Description
<b>router</b>	Router forwarding mode
<b>bridge</b>	Bridge forwarding mode
<b>irb</b>	Router-bridge-coexist forwarding modes
<b>sdn</b>	VXLAN SDN mode
<b>evpn</b>	VXLAN EVPN mode

### Defaults

Control plane mode: set to the VXLAN EVPN mode by default.

### Command Mode

Privileged EXEC mode

### Default Level

14

### Usage Guide

Users select the corresponding modes based on their network environments.



The device is restarted when the device mode is switched. Therefore, make sure that the configurations are saved.

### Configuration Examples

The following example configures the VXLAN router (SDN) mode for a device.

```
Ruijie#vxlan convert mode router sdn
Convert VXLAN Mode to Router(SDN) and Reload System? (y/N)y
```

### Verification

Run the **show vxlan mode** command to display the current mode of the device.

```
Ruijie#show vxlan mode
VXLAN Device Mode: Router(SDN)
```

## 1.28 vxlan copy dscp enable

Use this command to enable DSCP field copy in VXLAN packets.

**vxlan copy dscp enable**

Use the **no** form of this command to disable DSCP field copy in VXLAN packets.

**no vxlan copy dscp enable**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** DSCP field copy in VXLAN packets is enabled by default.

**Command Mode** VTEP configuration mode

**Default Level** 14

**Usage Guide** After this function is enabled, the device will trust the DSCP field in original packets from intranet. During forwarding, the device copies the DSCP field value in original packets to the outer layer of VXLAN packets.

This function is enabled by default. After this function is disabled, the **no vxlan copy dscp enable** command is displayed in the **show run** command output.

**Configuration Examples** The following example disables DSCP field copy in VXLAN packets.

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#vtep
Ruijie(config-vtep)#no vxlan copy dscp enable
```

**Verification** N/A

## 1.29 vxlan gateway synchronize

Use this command to enable VXLAN all-active gateway synchronization.

**vxlan gateway synchronize**



Use the **no** form of this command to disable VXLAN all-active gateway synchronization.

**no vxlan gateway synchronize**

Parameter Description	Parameter	Description
	N/A	N/A
Defaults	N/A	
Command Mode	VTEP configuration mode	
Default Level	14	
Usage Guide	<p>This command takes effect only in VXLAN-SDN mode. In a VXLAN-SDN topology, if VXLAN centralized all-active gateways are deployed, this function can be used to synchronize ARP and MAC entries on all gateways.</p> <p>Note: This command needs to be executed on all centralized all-active gateways. A gateway cannot synchronize entries if this command is not executed.</p> <p>Note:</p> <p>Execute this command only on the gateways.</p> <p>This function depends on the BGP-EVPN function. This function can be used only after the BGP-EVPN function is configured.</p>	
Configuration Examples	<p>The following example enables VXLAN all-active gateway synchronization.</p> <pre>Ruijie#configure terminal Enter configuration commands, one per line. End with CNTL/Z. Ruijie(config)#vtep Ruijie(config-vtep)#vxlan gateway synchronize</pre>	
Verification	Run the <b>show run</b> command to check whether the current configuration is successful.	

## 1.30 vxlan mac static

Use this command to set static VXLAN MAC forwarding entries.

**vxlan mac static** *mac-address vni vni-number interface interface-name*

Use the **no** form of this command to delete static VXLAN MAC forwarding entries.

**no vxlan mac static** *mac-address* **vni** *vni-number* [ **interface** *interface-name* ]

Parameter Description	Parameter	Description
	<i>mac-address</i>	MAC address
	<i>vni-number</i>	Indicates the VNI. The value ranges from 1 to 16,777,215.
	<i>interface-name</i>	Name of a next-hop interface in a MAC entry, which can be the name of an Ethernet interface, AP interface, or Overlay tunnel interface.

**Defaults** N/A

**Command Mode** Global configuration mode

**Default Level** 14

**Usage Guide** Use this command to set static VXLAN MAC forwarding entries in SDN mode. Note that the next-hop interface must be created before this command is executed.

**Configuration Examples** The following example configures two static VXLAN MAC forwarding entries for a VXLAN corresponding to 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
TenGigabitEthernet 0/1
```

**Verification** Run the **show vxlan mac** command to check whether the VXLAN MAC forwarding table exists.

```
Ruijie#show vxlan mac
```

VXLAN	MAC Address	Type	Location	Interface	IP Address
1	0000.1111.1111	static	remote	overlayTunnel 1	2.2.2.2
1	0000.5555.5555	static	local	Te0/1	0.0.0.0
1	0000.5555.5577	static	local	Te0/1	0.0.0.0
1	0000.8888.8888	static	remote	overlayTunnel 1	2.2.2.2

count: 4

## 1.31 vxlan overlaytunnel keepalive

Use this command to configure the global tunnel keepalive function.

**vxlan overlaytunnel keepalive** [**frequency** *timeval-num1* **timeout** *timeval-num2* **times** *times-num*]

Use the **no** form of this command to cancel the global tunnel keepalive function.

**no vxlan overlaytunnel keepalive** [**frequency** *timeval-num* **timeout** *timeval-num* **times** *times-num*]

Parameter Description	Parameter	Description
	<i>timeval-num1</i>	Indicates the time interval for the detection, the range is from 2 to 60s. The default value is 5s.
	<i>timeval-num2</i>	Indicates the timeout time for the detection, the range is from 2 to 20s. The default value is 3s.
	<i>times-num</i>	Indicates the keepalive times for the detection, the range is from 1 to 16. The default value is 3.

**Defaults** N/A

**Command Mode** VTEP configuration mode

**Default Level** 14

**Usage Guide** This command takes effect only in VXLAN-SDN mode. If the tunnel status needs to be detected in a customer scenario, this function must be enabled.

**Configuration Examples** The following example enables tunnel keepalive detection.

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#vtep
Ruijie(config-vtep)# vxlan overlaytunnel keepalive
```

**Verification** Run the **show vxlan keepalive** command to display the keepalive status of the current tunnel.

```
Ruijie#show vxlan keepalive
```

## 1.32 vxlan overlaytunnel rate-limit

Use this command to set the input/output rate limit of a tunnel.

**vxlan overlaytunnel dip** *ip-address* **rate-limit** { **output** *rate-num* | **input** *rate-num* }

Use the **no** form this command to cancel the input/output rate limit of a tunnel.

**no vxlan overlaytunnel dip** *ip-address* **rate-limit** { **output** [*rate-num*] | **input** [*rate-num*] }

Parameter Description	Parameter	Description
	<i>ip-address</i>	VTEP IP address of the peer end of the tunnel interface
	<i>rate-num</i>	Rate limit value
Defaults	N/A	
Command Mode	VTEP configuration mode	
Default Level	14	
Usage Guide	<p>Configure the input/output rate limit on the tunnel interface if you need to limit the tunnel rate.</p> <p>The <b>output</b> parameter indicates that the tunnel output rate is limited. The <b>input</b> parameter indicates that the tunnel input rate is limited.</p> <p>If the product hardware does not support tunnel rate limiting, this command cannot be executed.</p> <p>If the product does not support tunnel output rate limiting, the <b>output</b> parameter cannot be configured.</p> <p>If the product does not support tunnel input rate limiting, the <b>input</b> parameter cannot be configured.</p>	
Configuration Examples	<p>The following example limits the output rate of a tunnel.</p> <pre>Ruijie#configure terminal Enter configuration commands, one per line. End with CNTL/Z. Ruijie(config)#vtep Ruijie(config-vtep)# vxlan overlaytunnel dip 2.2.2.2 rate-limit output 5000</pre>	
Verification	N/A	

## 1.33 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
<i>port-number</i>	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.

**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
```